THE MARINE RECORD.

DEVOTED TO COMMERCE, ENGINEERING AND SCIENCE.

$2.00 PER YEAR. ESTABLISHED 1878. 10c. SINGLE COPY.

VOL. XVIII. CLEVELAND, OHIO, OCTOBER 17, 1895. NO. 42

CONGRESS AND THE HYDROGRAPHIC OFFICE.

A strong effort is now being made to have Secretary Herbert recommend to Congress that the Hydrographic Office be made a bureau and given control of the coast survey. In his last annual report Secretary Herbert strongly urged that the survey be placed under the control of the Navy Department, and when the superintendency of the survey was vacant the President was requested to detail a naval officer to the position so as to bring about this condition without resort to Congress. Neither the President nor Congress, however, would act in the matter. It is pointed out by the officials of the Department that the work of the survey is nearly completed, and whatever topographic work remains undone would be completed promptly just as soon as the Navy had control of it, as that service is deeply interested in having complete charts of our coasts. It is urged that in the future most of the work of the survey will be hydrographic in character and therefore in the line of the duty now being preformed by naval officers. The Secretary said in his last annual report that a transfer of all this work to the department would unify, cheapen and expedite the making and correcting of charts, which must always remain essential to navigation. One of the principal duties of the Hydrographic Office is in regard to the location of derelicts and their destruction by men-of-war detailed for the purpose, and this work will be greatly increased in case the United States and England, as now seems probable, should enter into an agreement to keep the North Atlantic ocean free from floating hulks. Should the coast survey be placed under the control of the department the result would be to make the work too voluminous for a branch office to handle, and some of the officials of the department therefore think it would be advisable to make the office into a bureau.

AN IMPORTANT DECISION.

In accordance with a ruling of the Attorney General, Secretary Carlisle, of the Treasury Department, has decided a case that has been long hanging fire. The British steamship Southery, was wrecked at Alacran Reef, Mexico. The wreck was released and taken to Brooklyn, and subsequently to Newport News, where she was repaired to the extent required for admission to American registry. The latter, however, was refused on the ground that the vessel had not been wrecked in American waters. An attempt was made to secure a ruling from the Secretary which would include wrecks from outside waters, but he refused to alter the regulation, which has stood for forty years.

WORKING FOR THE LAKES.

President William Livingstone and Secretary C. H. Keep, of the Lake Carriers' Association, are spending this week in Washington in the interest of desired aids to navigation. They have had conferences with Secretary Carlisle of the Treasury Department, Secretary Lamont of the War Department, and General Craighill, Chief of Engineers, relative to these improvements, and have also appeared before the Light-House Board.

ANOTHER BOILER TEST.

The Bureau of Steam Engineering will send Chief Engr. James Perry and either P. A. Engr. B. C. Bryant or Gustav Kammerling to witness a trial of the Babcock & Wilcox boilers on the lake steamer Zenith City. It is the desire of the Department that some of the smaller ships should be supplied with coil boilers and if good results follow their adoption to use them in the larger ships. At least one of the new composite gun-boats, bids for the construction of which were opened some days ago, will be supplied with coil boilers. Engr.-in-Chief Melville requested the bidders on these boats to inform the Department what extra cost would be involved in supplying one of the boats with the Babcock & Wilcox boilers, that being the type now preferred by the Department. The board which tried the Belleville boilers on the North West recommended against their adoption, and the Bureau cannot consider them at the present time in connection with the new gunboats.—Army and Navy Journal.

MORE BIG RECORDS.

The new steamer Yale early in the week delivered 4,452 tons of hard coal at Milwaukee, and Wednesday she left Chicago with 168,000 bushels of oats and 59,000 bushels of corn, making 227,000 bushels of grain, the freight on which is over $6,000. She was drawing less than 15½ feet.

The steamer Zenith City broke all Lake Superior records for grain cargoes last week by loading 140,000 bushels of wheat for Buffalo on 14 ft. 2½ in. forward, and 14 ft. 7 in. aft, with 125 tons of fuel.

CHANGE OF A PROMINENT FIRM.

The Huyett & Smith Manufacturing Co., of Detroit, announce in a neat circular, under date of October 12, that they have transferred all their interests to the American Blower Co., who will continue the manufacture of hot-blast apparatus, dry kilns, fans, blowers, engines, and kindred machinery. The personnel remains the same, with the exception of the withdrawal of Mr. W. D. Smith, vice president. Mr. Huyett not having been connected in the company for ten years, the name had become meaningless, and a change was deemed advisable.

PERSONAL.

Capt. Robert Smith, of the Christopher Columbus, is now sailing the Samuel Mather in place of Capt. Lyon, who resigned on account of illness.

Capt. Charles Moody, of Milwaukee, lately in command of the Nebraska, will sail the Ann Arbor No. 1, which is just finishing her repairs.

Capt. John Swainson who, with his family, has been spending several months in the British Isles, has returned home, coming back via Montreal and Lake Ontario.

Capt. Thomas P. Dunn, who assisted in the construction of the new steamer Simon J. Murphy, has accepted the command of the big tug J. C. Perrett, which is now towing the big W. & M. car ferry barges.

THE FREIGHT SITUATION.

The upward movement in freights seems to have taken a rest, and there is an apparent weakness in the Lake Michigan rate on ore, caused chiefly by a slump in the Chicago wheat rate to 3¼c on wheat; but this is only temporary; and a renewal of strength may be expected. The ore shippers are it would seem, trying to break the Duluth wheat rate – now 6c, the only advance noted this week—and the demand for tonnage became much lighter. This seems very artificial, however, and rather transparent withal. considering the steady accumulations at the docks at the head of the lakes, only a few mines on the Mesabe range, have ceased shipments. The ore rate from the head of the lakes remains at $1.75. Statistics of ore shipments give a total of about 8,200,000 tons to October 1.

The ore shippers are rather taken by surprise at the extraordinarily high grain rate from the head of the lakes, and are arranging with furnace men to let as much of it as possible go over until next season. One leading shipper has announced that out of one sale of 100,000 tons, he had effected an arrangement whereby he could let 65.000 tons go over until next season. This sounds very much like the statement of some one intensely interested in softening the rate, but there is doubtless a good deal of truth in these statements. The constant demand of the furnace men, and the large quantities of ore send forward immediately after arrival, have been a godsend to the dock operators, who find more space on their docks than they had during many years when receipts were much lighter. Owners are not disposed to charter their boats more than a day or two ahead, but a few are figuring on a block of 40,000 tons of ore at $2.

The supply of coal at Duluth and Superior is about 35,000 tons short of what it was a year ago, and it is certain that the demand for the winter will be fully twice as heavy. Already there are flying rumors of a coal famine in the Northwest, and a consequent advance in price. The shortage is due to the high down freights, very few boats caring to stop and take coal up. The shippers would probably be willing to pay better than 35c, but it would be of little use in securing tonnage, and they feel that they can hardly afford, profits on sales being considered, to pay enough to make it an object. Chicago is not so well supplied, either, as a year ago, and the same may be said of Milwaukee. The situation in hard coal is very similar.

Northwestern farmers are holding back their wheat as much as their need of money will allow, and are sending forward flax and other coarse grain instead. As a result wheat receipts at Duluth and Superior are falling off, and receipts of the coarser grains are increasing correspondingly. The supply in the elevators of the two ports on Oct. 12 was as follows:

	Bushels
Belt Line	665,508
Consolidated	1,403,169
Globe	2,075,309
Great Northern	282,336
Superior Terminal	743,117
Consolidated H	110,296
Consolidated B	126,886
Aggregate	5,406,621
Wheat in store at Minneapolis	9,513,706

LAKE CARRIERS' ASSOCIATION.

To consider and take action upon all general questions relating to the navigation and carrying business of the Great Lakes, maintain necessary shipping offices and in general to protect the common interest of Lake Carriers, and im rove the character of the service rendered to the public.

PRESIDENT.

WILLIAM LIVINGSTONE, - - Detroit, Mich.

SECRETARY.

CHARLES H. KEEP, - - - Buffalo, N, Y.

TREASURER.

GEORGE P. MCKAY, - - Cleveland, O.

COUNSEL.

HARVEY D. GOULDER, - Cleveland. O.

VICE PRESIDENTS.

J. C. GILCHRIST,	Cleveland.	THOS. CRANAGE,	Bay City
A. A. PARKER,	Detroit.	W. S. BRAINARD,	Toledo.
S. D. CALDWELL,	Buffalo.	E. D. CARTER,	Erie.
WILEY M. EGAN,	Chicago.	J. C. RICKETSON,	Milwaukee.
F, N. LASALLE,	Duluth.	F. J. FIRTH,	Philadelphia.

EXECUTIVE AND FINANCE COMMITTEE.

H. M. Hanna,,	Cleveland, Ohio.	D. C. Whitney,	Detroit, Mich
H. H. Brown,	Cleveland, Ohio.	W. P. Henry,	Buffalo, N. Y.
James Corrigan,	Cleveland, Ohio.	J. J. H. Brown,	Buffa o, N. Y.
H. A. Hawgood,	Cleveland, Ohio.	David Vance,	Milwaukee, Wis.
Thomas Wilson,	Cleveland, Ohio.	R. P. Fitzgerald,	Milwaukee, Wis.
M. A. Bradley,	Cleveland, Ohio.	John G. Keith,	Chicago, Ill.
J. C. Gilchrist,	Cleveland, Ohio.	J. S. Dunham,	Chicago, Iil.
E. M. Peck,	Detroit, Mich.		

COMMITTEE ON AIDS TO NAVIGATION:

W. C. Richardson,	Cleveland, Ohio.	W. M. Egan,	Chicago, Ill.
George P. McKay,	Cleveland, Ohio.	Frank Owen,	Ogdensburg, N. Y.
H. G. Dalton,	Cleveland, Ohio.	A. W. Colton,	Toledo, Ohio.
B. L. Pennington,	Cleveland, Ohio.	James Davidson,	Bay City. Mich.
Thomas Wilson,	Cleveland, Ohio.	Alvin Neal,	Port Huron, Mich.
John W Moore,	Cleveland, Ohio.	M. M. Drake,	Buffalo, N. Y.
W. S. Mack,	Cleveland, Ohio.	W. Bullard,	Buffalo, N. Y.
David C. Carter,	Detroit, Mich.		

COMMITTEE ON LEGISLATION:

S. D. Caldwell,	Buffalo, N. Y.	James Corrigan,	Cleveland, Ohio.
James Ash,	Buffalo, N. Y.	Wm. Livingstone,	Detroit, Mich.
E. T Evans,	Buffalo, N. Y.	James Millen,	D troit, Mich.
P. P. Miller,	Buffalo, N. Y,	Jesse Spaulding,	Chicago, Ill.
John Gordon,	Buffalo, N. Y.	C. A. Eddy,	Bay City, Mich.
W. Bullard,	Buffalo, N. Y.	Alex. McDougall,	Duluth. Minn.
Edward Smith,	Buffalo, N. Y.	F. J. Firth,	Philadelphia, Pa.
H. M. Hanna,	Cleveland, Ohio.		

AN ODD CONVEYOR.

(ILLUSTRATED.)

The immense advantage enjoyed by the lake fleet in the matter of terminal facilities is emphasized by the accompanying cut. which represents a device whose inventor has just been awarded a patent (No. 547,453). This was evolved from the brain of Mr. Frank Ridgway, of New York, and is called a device for transferring coal from one vessel to another. It consists of "a bag or receptacle made of textile material, adapted to

hold the merchandise, and a removable float fitting within said bag and on top of said merchandise." These bags are secured by ropes to an endless cable, operating between the ships, the floats coming into service in case of accident.

Of course such an arrangement will be found highly useful in certain classes of trade, and might be applied to docks at some ocean ports to save expensive lighterage; yet such a method of handling freight presents an almost ludicrous contrast to an instance cited by Mr. J. R. Oldham in his paper read before the recent Deep Waterways convention: "One day in August the steamer Masaba arrived at Erie, Pa., at 4:30 a. m. On that day she discharged 2250 tons of iron ore. She then proceeded to Ashtabula, a distance of 48 miles, and loaded a partial cargo consisting of 1,232 tons of coal, and she was actually on her way to Lake Superior before dark on the day of her entry. To express this feat of mechanical ingenuity in other words, I may say that a total of 3,752 net tons of freight was handled, and the steamer was entered and cleared from two ports, nearly 50 miles distant, all within a period of fifteen hours.

NEWLY ENROLLED TONNAGE.

Following is a list of lake vessels to which official numbers and signal letters have been assigned by the Commissioner of Navigation, for the week ended Oct. 5:

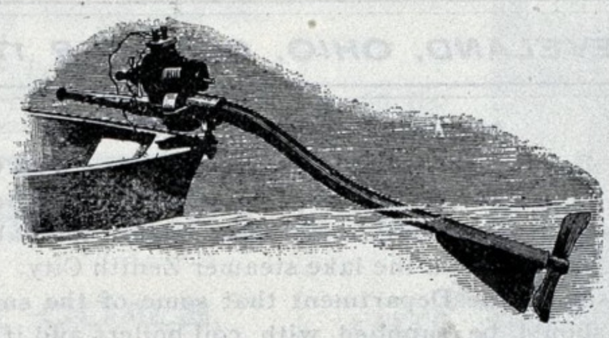
Official No.	Rig.	Name.	TONNAGE. Gross.	Net.	Home Port.	Where Built.
136,522	St c bt	E.T. Douglass	137.20	93.30	Buffalo	Buffalo
161,077	St s.	K.T. Wilbur	54.81	37.78	Oswego, N.Y.	Buffalo
92.678	St. s.	Mae. Martel	38.89	26.45	Grand Haven	Saugatuck
116,684	St. s.	S. J. Murphy	1,380.55	1 103 03	Milwaukee	W. Bay City

PROPELLERS FOR SMALL BOATS.

(ILLUSTRATED.)

America and England have brought out simultaneously electrical inventions for the same purpose, and as is usually the case, the Yankees are slightly in advance in point of practicability. The first illustration shows the appearance of a device which was referred to in THE RECORD of August 15. It can be used on any 10 to 18-foot boat, and can be transferred from one to the other in a few minutes. So simple is its operation that a child can manage it. The bent tube contains a linked shaft, by which the electric motor near one end operates the screw at the other. The fin-like projection close to the propeller serves as a rudder. The device is set in a socket, which can readily be attached to the boat by means of four or five screws. By means of the handle the rudder motor may be turned in any direction, the propeller being even brought around inside the boat, if desired; this facilitates the removal of grass and weeds, when necessary.

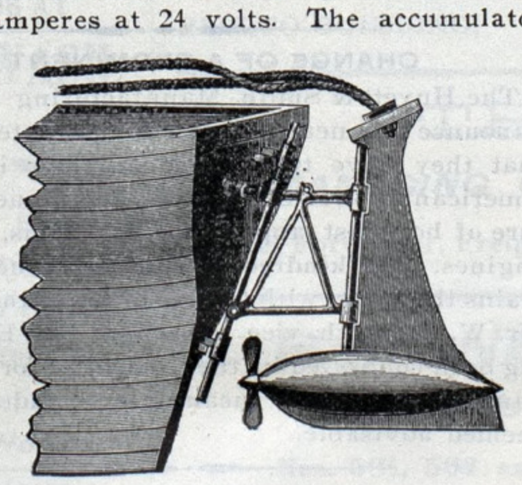
The motor is operated by means of a battery, the type used being the Crowdus Primary, which received the



highest award at the World's Fair, and which can be recharged by any one with material procurable at any drug store at moderate cost. Four of these batteries are necessary to an outfit, each weighing 25 pounds, and the four producing about ⅓ h.p. Any battery, however, can be used in connection with this motor. The motor, propellor, rudder and shaft weigh in all but 35 pounds. Only one size, suitable for small boats only, is now made; but the same principle is susceptible to enlargement in a limited degree, and this may be done later. The apparatus is being sold by the Portable Electric Boat Propeller Co., 136 Liberty st., New York.

The second cut represents a form of portable electric rudder-motor, recently introduced by the New-Mayne Electric Rudder-motor Syndicate, Limited, Palace Chambers, Westminster, S. W. The system may be said to consist of three parts. First is the motor, shaped like a minature torpedo, and secured to the boat's rudder in such a manner that its screw shaft runs normally on the keel line of the boat, its movement with the rudder greatly increasing the steering power of the boat. The outer case of gun-metal is readily taken apart, to permit of examination of the armature, commutator, brushes, &c., all of which are of special strength.

The winding is in series, and the ½ h.p. motor will take from 20 to 30 amperes at 24 volts. The accumulators



for this size consist of 12 cells of the I. E. S. type, contained in four boxes capable of being easily stowed under the seats. These accumulators suffice for five hours' running, at five to six miles an hour, and may, of course, be re-charged from any dynamo. A regulating switch enables the motor to be reversed, or driven at any intermediate speed, ahead or astern as required. The current passes from the accumulator to this switch, and from thence by means of the rudder lines to the motor

When the rudder is unshipped, the propeller may be replaced by a pulley wheel, and the motor used for other purposes.

At present these motors are made in two sizes only, namely, ½ and 1 h. p. each, but special quotations will be given for larger sizes. The whole 1 h. p. outfit weighs only about 400 pounds, and its presence does not in any way interfere with the ordinary rowing of the boat.

TWO NEW LIFEBOATS.

There was a large gathering of newspaper and seafaring men on the water end of Central wharf, Boston, about October 1, when Harry Hutchinson, the nautical instrument man of State street, introduced the new Aneillo lifeboat. The exhibition boat was in the shape of a dory with air-tight chambers at bow and stern and lots of air-tight compartments below the planks. But besides this there is a well fitted with automatic valves at the stern, which only opened to let the water out.

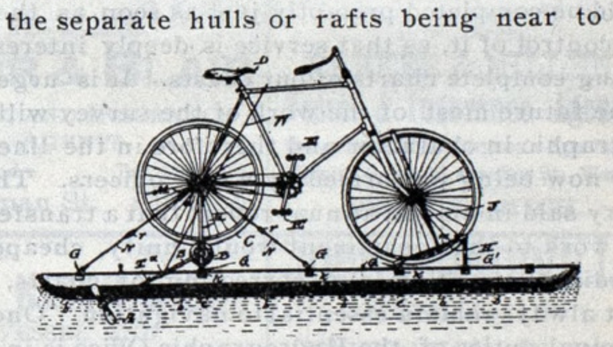
A new hydraulic jet life-boat has just been tried in England. The propulsion of the vessel is effected by means of a nearly horizontal centrifugal pump, having an impeller 30 inches in diameter, driven direct by a compound surface condensing engine having cylinders 8½ in. and 14½ in. diameter, with a stroke of 12 in. The pump is fed by an inlet amidships, and delivers through four outlets in the side of the boat—two for motion ahead, one on each side below the water aft, and two for motion astern, above water forward. The engines only run one way; the direction of motion of the boat being governed by valves in the discharge pipes of the pump, which are manipulated from the engine room or by the steersman, who can cause the boat to turn on her center independently of the rudder. The speed attained was 9.25 knots.

THE BICYCLE AFLOAT.

(ILLUSTRATED.)

Mr. John Dean, of Racine, Wis., has just obtained letters patent (No. 547,422) on a device which he worked out last season, and for which he applied for protection Dec. 19 last. While not apparently of any commercial use, the machine affords an opportunity for the venturesome athlete to try his hand at a style of navigation, in enjoying which it will behoove him to remain near shore.

The device consists of a sort of catamaran arrangement, the separate hulls or rafts being near to each



other and connected by a set of iron braces which form a cradle and support for an ordinary bicycle, independently of the rear wheels. These rear wheels rest on friction drum between the two hulls, which is connected by gear to the shaft of a small propeller at the stern of each hull. The two hulls are known technically as parallel knockdown trusses, each of which has a hinged forward section. The forward wheel is abreast of and firmly attached to these forward sections, which serve as quick-action rudders, and are guided by turning the handle-bar of the bicycle, as on land.

PREVENTS CORROSION.

A correspondent of the American Machinist, who recently built a steam launch, makes the following statement: I launched the boat on the 17th of July last. On taking the boat out of the water last week, I was surprised to find the shaft, 1¼ inches diameter, corroded to ⅞ inch diameter between the wheel and the stern bearing, and also found that the heads of the galvanized lag screws, which fasten the stern bearing, completely gone. The wheel and bearing are of composition. There is also a lead sleeve in stern deadwood. I think the trouble is caused by galvanic action. Please let me know if you think that I am right, and how to remedy it, when I put in a new shaft in the spring, and also, if I can use any other metal for the shaft.

Our contemporary replies: You give the correct cause for the corrosion; in fact, nothing else could have been expected, when steel and brass are in contact with salt water. The lag screws should be made of Muntz's metal and forged Tobin bronze. The part of the shaft which passes through the stern bearing should have a brass sleeve. But it will be as cheap and better in the end to make this part of the shaft of Tobin bronze, which will need no sleeve.

A NEW FACTOR IN THE STRENGTH OF BOILERS.

Mr. J. C. Spence has collected some interesting and valuable experimental evidence in London Engineering, from which the discovery is claimed of a new source of strength sufficient to justify an economy of material in the shells of marine boilers of from 30 to 60 per cent. The value of this will be difficult to estimate, at a time when the tendency to increase pressure is limited mainly in many cases, by the practical difficulties of working shell plates of greater thickness than those now in use. Mr. Spence claims to have demonstrated that the shells of boilers are now being made very much thicker than they need to be, solely through an erroneous theory, based on assumptions which are theoretically unsound, and which he has proved by experiment to be utterly worthless and misleading.

Hitherto the strength of boiler shell has invariably been estimated on what is known as the "endless ring" theory, which rests upon the assumption that pressure tends to stretch the shell, and is resisted only by the resistance to stretching of the shell plates, and their joints, and that the flat ends to which the circular shell is attached receive no appreciable part of the pressure of the shell, and add nothing to its strength.

In opposition to this, Mr. Spence argues that as the end plates are rigidly attached to the circular shell, the shell cannot stretch without stretching the end plates, and their resistance to stretching must be added to the resistance of the shell plates, in order to arrive at the strength of the boiler. According to this theory, the true strength of a cylindrical shell is made up of two factors: First, its strength as an endless ring, which depends only on the diameter of the cylinder, independent of its length; second, its strength as a hollow cylindrical beam, supported at the ends and uniformly loaded, and this depends only on the length of the cylinder, and is independent of its diameter. The second of these factors has heretofore been as a small, negligible quantity not worth taking into account; but according to Mr. Spence's theory, in a cylinder of given proportion of length to diameter the load transmitted to the ends is to the load carried by the shell in the same proportion as the diameter of the cylinder is to its length. Thus, in a cylinder where a diameter equals the length, the load transmitted to the ends is equal to the load carried by the shell plate; in a cylinder where the diameter is half its length, the strength of the shell as a beam is one-half its strength as an "endless ring." This is, according to Mr. Spence's theory, the normal distribution of stress in a true cylinder of uniform strength throughout shell and ends. Cylindrical boilers are not exactly true cylinders, and are not uniform in strength; but they approximately satisfy these conditions, and any deviation from the standard is covered by the margin of safety which is usual and proper in boiler work. Assuming that the law which would be exact in a true cylinder of uniform strength is approximately correct for cylindrical boilers, Mr. Spence shows that in marine boilers of different types, where the proportion of diameter to length ranges from half to one and one-half, the factor of end resistance varies from 50 to 150 per cent of the value of the resistance of the shell, treated as an endless ring. Thus, if the safe working pressure of a ring 15 feet in diameter by 10 feet long by ¾ inch thick were 100 pounds, considered merely as a ring, unsupported at the ends, then its strengh as a beam would be such that it could transmit to its ends a working pressure of 150 pounds to the inch. If, then, a boiler is made of a circular ring of the above dimensions, riveted to two end plates of the same thickness as the shell plate, namely, ¾ inch, then the working strength of the boiler is 250 pounds, of which 100 pounds is absorbed in stretching the shell plates, and 150 pounds is absorbed in stretching the end plates.

If this theory is correct, the true strength of a boiler shell of these dimensions is two and a half times as great as it is now assumed to be. As the ratio between the length of a cylinder and its diameter increases, the value of the factor of end resistance decreases rapidly, so that in land boilers, in pipes and tubes where the length is great in proportion to the diameter, the "endless ring" theory is a pretty close approximation to the truth. It was to cylinders such as these that the "endless ring" theory was first applied. The change from the stationary boiler, where the length is very great in proportion to the diameter, to the modern marine boiler where the length is about equal to the diameter, being sometimes greater and sometimes slightly less, has taken place by small and insensible steps, and it is easy to see how a theory which was obviously true for the cylinders to which it was first applied might be accepted as a general rule, and finally applied to cases where it is palpably absurd. It is evident that in this way an error which was too small to be worth consideration might grow to the dimensions indicated by Mr. Spence.

Mr. Robert Logan, the well-known naval architect, when shown the above article and asked for his opinion, said: "I don't think the discovery will change the amount of material used in the construction of boilers, nor is it likely to prove of any practical value. While his claims are theoretically correct, the main point with us has always been the life of a boiler and the feeling is general that boilers do not now last any too long, without any decrease in the material."

WAITED TOO LONG.

In commenting upon the recent advances made in the prices of anthracite coal, Black Diamond continues as follows: "It may be somewhat of a question as to what extent the consuming element has stocked up and bought at the low figures which have been prevailing so long, but reports from the chief centers of distribution would indicate that they had not taken so very much of an advantage of the opportunity which was at

CAPT. L. M. CLEMONS.

their disposal. Advices from the West and Northwest all show a heavy increase in demand for business, and it may be said most unqualifiedly that the advance which has been made has been of the most beneficial nature upon everything connected with the trade; it has developed business, and cannot fail but cause the greatest regret that the advancing question was not made before. Once more we have had a very emphatic demonstration that apparently people do not care to buy an article when it is cheap. At the figures at which coal was being sold at, it was very clear that after transportation and cost of mining had been paid, practically nothing was left over for the coal. Yet, although this was a most evident and tangible fact, it was almost impossible to persuade dealers to buy to any very great extent, they apparently being carried away with the idea that as coal had dropped to such a low figure it would go still lower. This has proven to have been a perfect fallacy, and the dealer trade is advised to-day to buy what coal it can at prevailing rates."

HYDROGRAPHIC CHARTS

Of Lakes Erie, Ontario, Superior, Michigan, Huron, and St. Mary's, St. Clair and Detroit Rivers, for sale at the office of the MARINE RECORD, No. 144 Superior street, Cleveland. Prices 75 and 50 cents each.

MARINE RECORD Life Savers' Series.

A VETERAN RESCUE MAN.

(ILLUSTRATED.)

While most of the vessels in the lake trade, when bound up and down Lake Erie, take the north passage under ordinary conditions, yet the south passage gets its share of traffic, by reason of the transfer of vesssels from a port of discharge to Toledo to load coal, and as well by Sandusky's increasing lake trade. There are abundant opportunities, moreover, for a vessel bound along the south passage to get into trouble, and plenty of it. About Marblehead, just west of Sandusky Bay, the sea is as nasty as it is anywhere on Lake Erie, and the Marblehead life-saving crew are by no means without active employment. The small craft of the vicinity alone keep the members well occupied. The crew displayed great bravery and prowess at the wreck of the E. C. Roberts during the past week.

Ever since the establishment of the Marblehead station, in 1876, Capt. L. M. Clemons has been in charge as keeper. Capt. Clemons was born in 1841, and is consequently nearing the close of his fifty-fourth year. This is by no means old, but the age is sufficient for him to have acquired plenty of experience, and he is one of the older members of the service.

Capt. Clemons spent the earlier part of his life in fishing, which occupation many experts say best fits a man for the life-saving service; as, in addition to having acquired enough knowledge of seamanship to handle and make fast lines properly, and to assist when necessary, in the navigation of a distressed vessel, it also gives them the very necessary experience, which is most frequently called into requisition, of handling small boats in heavy weather.

As before mentioned, Capt. Clemons was given charge of the station when it was established, in 1876, at a salary of $200 per year. In 1878 his salary was doubled, and on Sept. 5, 1882, it was raised to $600 per year. His pay was then raised to $700, and later to $900 per year.

One of the causes of the establishment of a station at this point and the appointment of Capt. Clemons as keeper was the wrecking of the schooner Consuelo, which occurred on May 1, 1875. Capt. Clemons' heroic rescue of the entire crew of the schooner won for him the first gold medal ever awarded by the United States government for the saving of life. This Capt. Clemons naturally prizes very highly, both as an acknowledgement of heroism, and as a relic. Capt. Clemons has the fine record of never having lost any lives at any wreck which has come under the care of his crew in the nineteen seasons of service which they have seen. Most of the men at this station have served year after year. Capt. Clemons has never had to discharge but one man since he has been keeper of the Marblehead station.

VISIBLE SUPPLY OF GRAIN.

As compiled for THE MARINE RECORD by George F. Stone, Secretary Chicago Board of Trade, October 12, 1895.

CITIES WHERE STORED.	WHEAT. Bushels.	CORN. Bushels.	OATS. Bushels.	RYE. Bushels.	BARLEY. Bushels.
Albany	.....	12 000	60 000	.....	.....
Baltimore	541 000	239 000	126,000	67,000	.....
Boston	159 000	119 000	16 000	.....	.....
Buffalo	2,162.000	227,000	491,000	132 000	357,000
" afloat	.....	.....	.....	.....	.....
Chicago	15 501 000	2 821 000	602 000	161,000	113 000
" afloat	.....	.....	.....	.....	.....
Cincinnati	43,000	23 000	36 000	36 000	56,000
Detroit	425,000	50,000	34 000	10,000	.....
" afloat	.....	.....	.....	.....	.....
Duluth	5.407,000	.....	99 000	77 000	682,000
" afloat	.....	.....	.....	.....	.....
Indianapolis	127 000	16 000	5,000	.....	.....
Kansas City	956 000	6 000	23,000	18.000	.....
Milwaukee	512 000	.....	.....	51 000	182,000
" afloat	.....	.....	.....	.....	.....
Minneapolis	9,514 000	.....	273,000	49 000	140,000
Montreal	260 000	2 000	63 000	3 000	.....
New York	4.353,000	177 000	626,000	30 000	14,000
" afloat	91,000	7 000	9 000	.....	30,000
Oswego	40 000	.....	.....	.....	65,000
Peoria	108,000	56 000	351 000	1 000	.....
Philadelphia	330,000	98 000	186.000	.....	.....
St. Louis	852,000	50 000	323.000	13 000	.....
" afloat	.....	16 000	.....	.....	.....
Toledo	1,012,000	226,000	126,000	112,000	.....
" afloat	.....	.....	.....	.....	.....
Toronto	22,000	.....	4.000	.....	9.000
On Canal	352.000	40,000	58.000	.....	664,000
On Lakes	1,714,000	1,190.000	518,000	.....	714.000
On Mississippi	.....	.....	.....	.....	.....
Grand Total	44,481.000	5,375,000	4 029.000	760.000	3,026,000
Corresponding date 1894	75 074,000	3 379,000	9 080.000	385,000	3,016,000

THE MARINE RECORD is the headquarters for marine publications of every description. No. 144 Superior St.

THE MARINE RECORD

ESTABLISHED 1878.

PUBLISHED EVERY THURSDAY, AT 144 SUPERIOR ST., (LEADER BUILDING), CLEVELAND, O.

IRVING B. SMITH, CAPT. JOHN SWAINSON, } . . . PROPRIETORS

BRANCH OFFICE:

CHICAGO, ILL., ... 238 Lake Street

THOMAS WILLIAMS, Associate Editor.

SUBSCRIPTION.

One copy, one year, postage paid, . . . $2 00
One copy, one year, to foreign countries, . . $3 00
Invariably in advance.

ADVERTISING.

Rates given on application.

Entered at Cleveland Post Office as Second-class Mail Matter.

CLEVELAND, O., OCTOBER 17, 1895.

VESSEL men can find little to complain of nowadays, except the weather. They are getting good freights, and, as a rule, good dispatch.

LORAIN announces that she wants a life-sav ing station and wants it bad enough to supply a volunteer crew if Uncle Sam and General Superintendent Kimball will furnish the outfit. The events of the past week certainly show that a station is needed somewhere between Cleveland and Marblehead. Capt. "Jim" Bowen, of the Cascade, is a host in himself, and if he had scalped everyone whom he rescued from drowning, he would have a string that would make an Indian die of envy. But the fact that he has had such a field of operations off Lorain should be considered sufficient proof that Lorain is a good port in which to place equipments for a volunteer crew.

LAKE men will doubtless feel impatient to see the full decision of the United States Court of Appeals, at Chicago, which affirmed the decision of the lower court in the case of claims against the Nebraska. The newspaper reports stated that liens must be enforced during the current season. As there are no "seasons" on the coast, the law must have been interpreted as meaning within a year, on the principle of a chattle mortgage. But why a master should be debarred from a wages lien, or why in that respect he has fewer rights than any member of the crew—his first mate for instance, who is paid for looking after the ship just as truly as is the master—is certainly incomprehensible to the plain lake men. It is certainly a principle of law that every employe is to a certain extent the representative and conservator of his employer's interests, the extent being bounded ony by his natural limitations, and those agreed upon with his employer. The difference is entirely in degree and skill.

THE movement to enlarge the scope of the Hydrographic Office, and to give it the title of bureau, certainly merits success. Setretary Herbert himself must surely see that the desire for this change is prompted only by a desire on the part of the men engaged in the work to increase their sphere of usefulness. The office, in its comparatively short career, has reached a degree of efficiency seldom equaled and never excelled by any other branch of government service, and the promptness with which it brings about valuable results is in happy contrast with the circumlocution tendencies of other departments. All this is especially true of the lake service, where the Hydrographic Office and its branches are thoroughly appreciated because of the tangible and widely beneficial results of the work on the lakes. This is nowhere shown more forcibly than in the large and ever increasing sale of the charts issued by that office, many lake men requesting that they be furnished with as yet unpublished charts as soon as the first consignment of the issue shall have been received. This is, of course, no reflection upon the engineers' charts, save that for lack of funds, the latter have been unable until recently to correct and reissue the old charts of the lakes; and the hydrographic charts have proven a most valuable auxiliary.

THE LAKE FISHERIES.

The following article has been given general publication, a few papers giving it the caption of "A Churlish Refusal:"

The Canadian minister of marine and fisheries at Ottawa has declined the request of the United States authorities to supply fish ova to the hatchery which has just been established at Cape Vincent. The view taken in official circles is that, so long as the present arrangement with regard to lake fisheries continues, the government is not justified in giving ova or fry to United States hatcheries.

It seems rather unthoughtful and extreme to condemn the action of the Canadian government in such harsh language as the quoted heading. But the great importance of the acticle lies in the intimation it conveys that the Dominion government is resolved to bring about some issue which may lead to an adjustment of the lake fisheries question, and may possibly result in the United States government assuming charge of the regulation of fishing privileges, the only consummation which can bring about absolute justice to all parties to this many-sided controversy. The Dominion is certainly justified in refusing to lend its aid in establishing fisheries from which, under present regulations, United States fishermen get (literally and somewhat paradoxically) the Lion's share of the benefit. Canada is also thoroughly justified in refusing to let down the bars to her own citizens, a sort of reprisal which many countries would indulge in, and which would result in a few years, in cutting down the number of fish in the lower lakes until the industry would be wiped out. Canada is plainly desirous of preserving the lake fisheries and this can best be done by united international action.

The chief source of alarm is, of course, not the numbrr of fish legitimately consumed, but the inroads made upon the fish during the period of reproduction, and in the vicinity of the spawning grounds when the fish are still young. Canada's regulations restricting fishing to licensed parties do not accomplish much so long as fishing on the American side is free, or regulated only by easily evaded state laws. The spawning grounds of the lower lakes are chiefly on the American side, and as to the regulation of fishermen, only the surveillance of a speedy revenue cutter can secure observance of the laws. It is to be hoped that if Canada is really trying to secure some concerted action, she will be successful, as a careful regulation would inure to the best interests of all engaged in fishing.

FLOTSAM AND JETSAM.

U. S. Marshal Pettit has seized the schooner Mark L. Breck (Br.) at Port Huron on drydock and tug bills.

Work has begun on the erection of a light-house at Sodus Point, 3 miles west of Manitou Beach, near Charlotte, N. Y.

The "Soo" line has been obliged to increase its package freight carrying capacity by the addition of the Wabash steamer George J. Gould to its fleet.

Nobody appeared to prosecute the charges made against Harbor Master Soper, of Buffalo, when his case came to trial, and it was dismissed with a finding which completely exonerated him.

The Lake Superior & Lake Michigan Transportation Company has contracted to carry 700 cars of flour from Duluth this season, to be delivered to the Big Four Railroad, at St. Joseph, Mich. Most of the flour is for export.

Capt. C. H. Sinclair, on behalf of the underwriters, offers the boilers and engine of the wrecked steamer Kershaw for $700. He claims they can be more easily recovered in the water than when on the reef. They are practically uninjured.

Thieves have stripped the schooner Lady Franklin, wrecked at Hammond's Bay, of everything of value just as was done on the Queen City. There is said to be a gang of this sort of pirates working among the Beavers, but they are not suspected of the thefts on Lake Huron.

Under the new yearly policies which have come into general use this season steamers of A1 rating are permitted to continue in service until December 10 without extra charge and to complete voyages they may be on at that date. Insurance on A1 sail and tow expires on December 5 and on all A2 boats on November 30. It is expected that all A1 boats will avail themselves of the limit and remain in service this season a week later than heretofore.

NOTICE TO MARINERS.

KEWAUNEE PIERHEAD RANGE (FRONT) LIGHT.

Notice is given by the Light-House Board that on or about October 17, 1895, the fixed red lantern light will be re-established on the outer end of the N. pier at the entrance to the harbor of Kewaunee. The light will be shown at a height of 24 feet above mean lake level, from the outer end of an elevated conduit extending shoreward 200 feet to the tower from which Kewaunee Pierhead light is shown, and with that light as a rear light, will form a range showing the direction of the piers and the course for entering the harbor.

BUOY ADRIFT—WRECK REMOVED.

Notice is hereby given that the red third-class can buoy marking the northeast end of Sheboygan Reef, is reported adrift, and will be replaced as soon as possible.

Notice is also given that the wreck of the schooner Kate Kelly off Wind Point (Racine Point), Wis., has been removed.

J. H. DAYTON, Commander, U. S. N.,
Inspector 9th Light-house District.

NOTES FOR NAVIGATORS.

The bell buoy on Point aux Barques Reef has been carried away by a raft.

Inspector Mead, of the Eleventh lighthouse district, announces that a white lantern light is exhibited from the masthead of the sunken schooner Itasca in the southeast bend of the St. Clair River.

The steamers Gould and Fitzgerald have struck a large rock in the west side of the channel abreast of Amherstburg lately. Capt. Andrew Hackett has marked it with a black stake and a float light.

Stakes one and six, marking the channel in the lake at the entrance to the bay, a little east of Cedar Point light entrance to Sandusky Bay, have been reset by the light-house tender Haze, and they are now planted opposite each other at the elbow.

The keeper of the Port Austin light station sends out word that he has taken soundings at ¾ to 1 mile NW. of the light and finds as low as 11 feet of water. As chart No. 18, Saginaw Bay indicates shoals only within ¼ mile of the light, mariners are warned by the Light-House Board to keep well away from the light until the shoal can be examined and a buoy placed.

OBITUARY.

CAPT. HUGH REYNOLDS.

The news of the death of Capt. Hugh Reynolds, of Bay City, will be received with general regret, as although only about thirty years old, he had a large lake acquaintance. A few years ago he left the Sand Beach life-saving crew and went sailing in the Owen Line, soon reaching positions which would probably have led to his appointment as master by this time had he remained with these people. However, he secured the steamer Germania, besides a part interest in other vessels, and entered into the Cleveland-Saginaw Bay package freight trade in company with Farasey & Marron, of Cleveland. His death was due to cancer of the stomach.

CAPT. WILLIAM CONNOR.

Capt. William Connor, master of the schooner Southwest, has been missing since a week ago Monday night, when his vessel was lying in Marquette harbor. The indications are that he missed his footing while attempting to board his vessel from the yawl in which he had gone ashore to send some telegrams. Robert Connor, his son, who was in the crew, says his father, who was an expert swimmer, has of late years become very sensitive to cold, and very quickly became chilled from exposure. Capt. Connor's home was in Cleveland, and he leaves a widow and four children.

VESSEL TRANSFERS.

The Mack fleet has been increased by the addition of a pair of the best wooden boats on the lakes, Capt. W. S. Mack having purchased the steamship Pascal P. Pratt and her consort, the Annie M. Ash from James Ash and others, of Buffalo. These boats were built at the Quayle yard in 1888 to the order of these gentlemen. The purchase price is said to be $140,000.

Another fine wooden boat that has changed hands is the steamer Thomas Davidson, which has been sold by the Davidson estate to a syndicate headed by J. Henry Pauly, of Milwaukee, and H. W. Cook, of the brokerage firm of Palmer, Cook & Calbick, of Chicago. The price, it is stated, is about $80,000. The Davidson was built in 1888 at the Wolf & Davidson yard, Milwaukee.

SHIP BUILDING AND REPAIRS.

CONTRACTS AND NEW WORK.

Although the Detroit Dry-dock Co. has not yet been officially notified that the contracts have been awarded, it is authentically stated unofficially that they are the successful bidders on two of the gunboats which the government will build. The chief of the Board of Naval Construction has reported favorably on their offer to construct two twin screw boats for $425,000, or one for $213,750, and as the board is made up from the chiefs of all the branches of naval construction, there is little doubt that the report will be approved. Ex-Postmaster General Don M. Dickinson has discussed the treaty question at length with Secretary Herbert, so nothing is feared on that score. The boats will possibly be constructed at Seattle, where Mr. McAllister, former chief draughtsman for the company, purchased a tract of land for the company when ill-health drove him to the Pacific coast.

At the Wyandotte yard of this company, the new side-weeel steamer building for the Cleveland & Buffalo Transit Co., is about one-third plated. On account of the rush of work at domestic mills, most of the beams had to be imported from Scotland and Montreal. The joiner work is well advanced, and it is considered that delays on account of the non-arrival of material are at an end, the boat will be pushed rapidly forward so the launching stage. The keel for the big 400-footer for the Wolverine Co., has just been laid. This company has just been laid. This company will lengthen the Fayette Brown and E. M Peck 50 feet each this winter at a cost of $40,000 each.

Nothing can be learned in Cleveland regarding the rumor which some of the daily newspapers have been printing to the effect that a 450 foot boat was likely to be contracted for soon in Cleveland. The 430 footer building at the Globe yard, for which the keel and some of the floors are down, is as large as will handle conveniently at Ashtabula, which is about the handiest ore-receiving port on the lakes. Docks are being altered, and slips lengthened there to accommodate this new boat and other large ones, and the prospect of anything larger is extremely unlikely. The laying of the keel for the revenue steamer Carlisle will soon begin at the Globe yard.

The Cleveland Ship Building Co. has been awarded the contract for building the engines and the boilers for the whaleback steamer to be built by the American Steel Barge Co., at West Superior. The engines will be 23 by 38 and 63 inches with 40 inches stroke. The new boat will have three Scotch boilers 12x13 feet, to be allowed 175 pounds of steam.

The Wilson Transit Co.'s new steel steamer is making good headway at the Cleveland yard, and the preparatory work on the big Wolvin boat is well advanced.

At Marine City Alexander Anderson & Co. are laying the keel for a tow barge 225 feet long, to tow with the steamer Wotan.

The F. W. Wheeler Co., at West Bay City, will deliver the lumber steamer Katahdin to her owners Saturday. The work on the large steamers building in that yard is going forward as fast as the arrival of material will allow.

The daily press has just awakened to the fact, published in the RECORD a month ago, to the effect that the Wheeler Company were effecting improvements in machinery, tool houses, etc., which would practically double the capacity of the yard. The company has plenty of land, and no longer builds its boats along the slips, but inside the river bank.

At James Davidson's shipyard, West Bay City, on Tuesday, the keel of a second schooner 300 feet long by 45 feet beam and 20 feet depth of hold to the top of the floor keelsons. The schooner will be a double-decker, having between-deck beams, although no between-deck planking will be laid. She will have steel keelsons, steel arches and straps, steam windlass, steam capstan, steam deck hoist and pumps, a large pony boiler, and all the most modern improvements. She will have four spars, and will be equipped with a full outfit of canvas. She will have a capacity of 3,000 gross tons on the Sault draft of 14 feet 3½ inches. She will rate A1* in the Inland Lloyds', and will have the highest class in the United States Standard Register.

This boat is a duplicate of the schooner announced exclusively in THE RECORD two weeks ago, for which material was at that time being sawed out in the Davidson yard.

The keel of the first schooner was laid last week, and the boats were molded wider than the dimensions announced on October 3. The capacity then given was too small. The first schooner is now being rapidly put in frame, and the frames are being sawed out for the second. They will be pushed rapidly to completion, and Capt. Davidson expects to have both completed by February 15.

Rumors come from Buffalo that Mr. James Ash, who has just disposed of the pair of boats controlled by him, is about to place an order for a new steel steamer. It had been thought in some quarters that he had sold so as to be out of the vessel business, but he still retains, it is understood, his interest in the America, Chili, and other steel boats, and he is probably of the number of those who believe that the money in lake commerce will hereafter be made by the large metal-carriers.

There has been a good deal of guess work as to the probable owner or prospective purchaser of the boat now building at the yards of the Union Dry-Dock Co., Buffalo. It is now reported that General Manager Hibbard, Mr. Underwood, and other prominent officials of the Soo line will own her, and will place her with the Soo line under an advantageous charter. This line needs more boats, as it has two large carriers under charter, the George Gould and George Dyer, besides the boats which it owns.

GENERAL REPAIR WORK.

The feature of repair work in Cleveland this week is the two large jobs on steel vessels, which have occupied the basins all week. The steamer Corsica, which sunk the Fryer in the Sault, and had her own bows badly crushed in from the rail to below the water line, went into the Ship Owners' smaller dock Friday morning. Half a day was consumed in getting off the false work and other protection put there by the wreckers, before the workmen of the Globe Iron Works Co., which is making the repairs, could do anything with the steel. More than twenty large plates had to come off, and she is practically receiving entire new bows, stem, breasthooks, stanchions, and rail, besides repairs to her forecastle forward. She will get out of the dock to-night and the repairs will be entirely finished by Saturday. The repair bill will be about $8,000. This is probably the quickest repair job of its size since the Pontiac was in the same dock several years ago. The Corsica's nose was run clear to the upper end of the dock, which allowed of a very convenient staging being erected. Mr. Albert Smith gave the work his personal supervision.

The other large job was that an the schooner Tyrone, which received a bad bottom damage by stranding. She is in the Cleveland dry-dock. About twenty-eight plates had to come off her bottom, and many others will have to be replaced by new ones. She entered the dock Monday, and will not get out before next Tuesday or Wednesday. Other jobs of the week at the Cleveland dock were the Alex. Nimick, which received a new fore-foot, stopped a leak, and had her butts calked, and the steamscow Transfer, which stopped a leak.

At the Ship Owners' large dock the steamer Henry Chisholm is in to have her wheel freshly keyed, and to stop a few leaks. The Aurora had her bottom calked and a new piece of stem put in. The tug Selah Chamberlain, of Lorain, had some calking done, her wheel tightened and a fresh coat of paint, and the schooner Hallaran stopped a few leaks.

CHICAGO.—At Miller Bros.' shipyard the tug T. T. Morford was in dock for bottom calking and ironing and repairs to her stern bearings. The schooner A. J. Dewey was in for a new forefoot and bottom calking. The steamer Elfin Mere was in for bottom calking and repairs to stern bearing. The steamer H. L. Worthington was in dock for a new rudder. The steamer S. K. Martin got a new wheel and the steamer Pine Lake a new shoe. The tug Dennis Brothers was re-ironed.

MANITOWOC.—At H. B. & G. B. Burger's shipyard the steamer Keystone was in dock last week for a general overhauling and re-calking all over outside, a new pintle, and repairs to rudder and stern bearing. The steamer John Otis went into dock Saturday afternoon for some calking and minor repairs. The steamer Lora was in dock for some repairs and calking, and a new outboard shaft. The steamer J. L. Hurd got an entire new bow and was calked all over.

MILWAUKEE.—At the Milwaukee Dry-Dock Co.'s shipyards the steamer D. Leuty was in dock and had her wheel fastened and rudder repaired. The steamer Ida E. was on the boxes completing repairs, comprising new cabin, new deck frames and deck, new wale strakes, new stem and heavy stem iron, with iron cheek pieces on each side; re-calking all over and No. 10 iron on the side. The Ann Arbor car ferry steamers Nos. 1 and 2 were in dock and were re-calked all over and had iron replaced, they also received eight 2-inch rods across under their main deck to strengthen the decks.

SHEBOYGAN, WIS.—At Reiboldt & Wolter's shipyard the schooner Quickstep, which went ashore south of Sheboygan last spring, is on the boxes receiving a thorough rebuild.

REPAIR NOTES.

The steamer John Pridgeon broke her shaft at Toledo. and will have repairs made in Cleveland.

The barge Little Wissahickon, which waterlogged on Lake Huron with a load of lumber, is to be docked at Port Huron.

The steamer W. H. Stevens is being calked all round at the Union dry-dock, Buffalo. The schooner Gebhard is getting a calking and general overhauling at Mills' dock, Buffalo.

The survey on the schooner J. I. Case, held by Capts. C. E. Benham and Dan McLeod, showed the damage from dismasting on Saginaw Bay, Sept. 23, to have reached $2,500. The injury was chiefly to the outfit.

The schooner P. B. Locke has just been receiving extensive repairs at Gilmore's dry-dock, Toledo. She has been calked all over, has received a number of new deck beams; new partners, and considerable other work.

The Goodrich line City of Racine has come out of dry dock at South Chicago completely iron for winter service. She has been sheathed with iron plates and strengthened in other ways necessary to withstand the fields of ice.

The City of London went into Mills' dry-dock, Buffalo for examination of her bottom, and to receive a new rudder, with steel sleeves and wings. The Lycoming was also in to have her bed-plate refastened. The tug O. W. Cheney was in the Union dock for minor repairs.

The steamer Mabel Bradshaw will make her last trip between Chicago, Whitehall, and Pentwater, next Saturday. Then she will go into winter quarters at Montague, Mich., where her machinery will receive a thorough overhauling at the Montague Iron Works. She will also have her hull calked all over, and other repairs made, placing her in first-class condition for next season's trade on the same route.

SECOND TRIP TO NEW YORK.

The steel canal barge fleet, after receiving some minor repairs at the Globe shipyard, are a second time on their way to New York. The present cargoes are mixed, and while carrying steel rails chiefly, the barges carry several hundred tons of copperas and a quantity of flour which was one of a series of shipments to New York, all previous shipments having gone via Montreal. The directors have as yet placed no definite orders for the construction of more of these barges, but it is believed to be only a question of a short time when the contract will be placed.

CANADIAN CANAL IMPROVEMENT.

The vessel owners of Hamilton will try to have the Hamilton canal, between Lake Ontario and Burlington Bay, deepened to fourteen feet. The new smelting works is expected to require 100,000 tons ore yearly, the greater part of which will come by boat.

The miter sill of the guard lock at the upper entrance to the new lock at Galops is now being taken out, while the channel of entrance to the new lock at Cardinal is being dredged out. During the winter both shoals at the entrance of the Beauharnois canal, which are causing trouble, will be removed, while the work of lowering the miter sill of the lock at Melochville will be done at a time when the canal is unwatered.

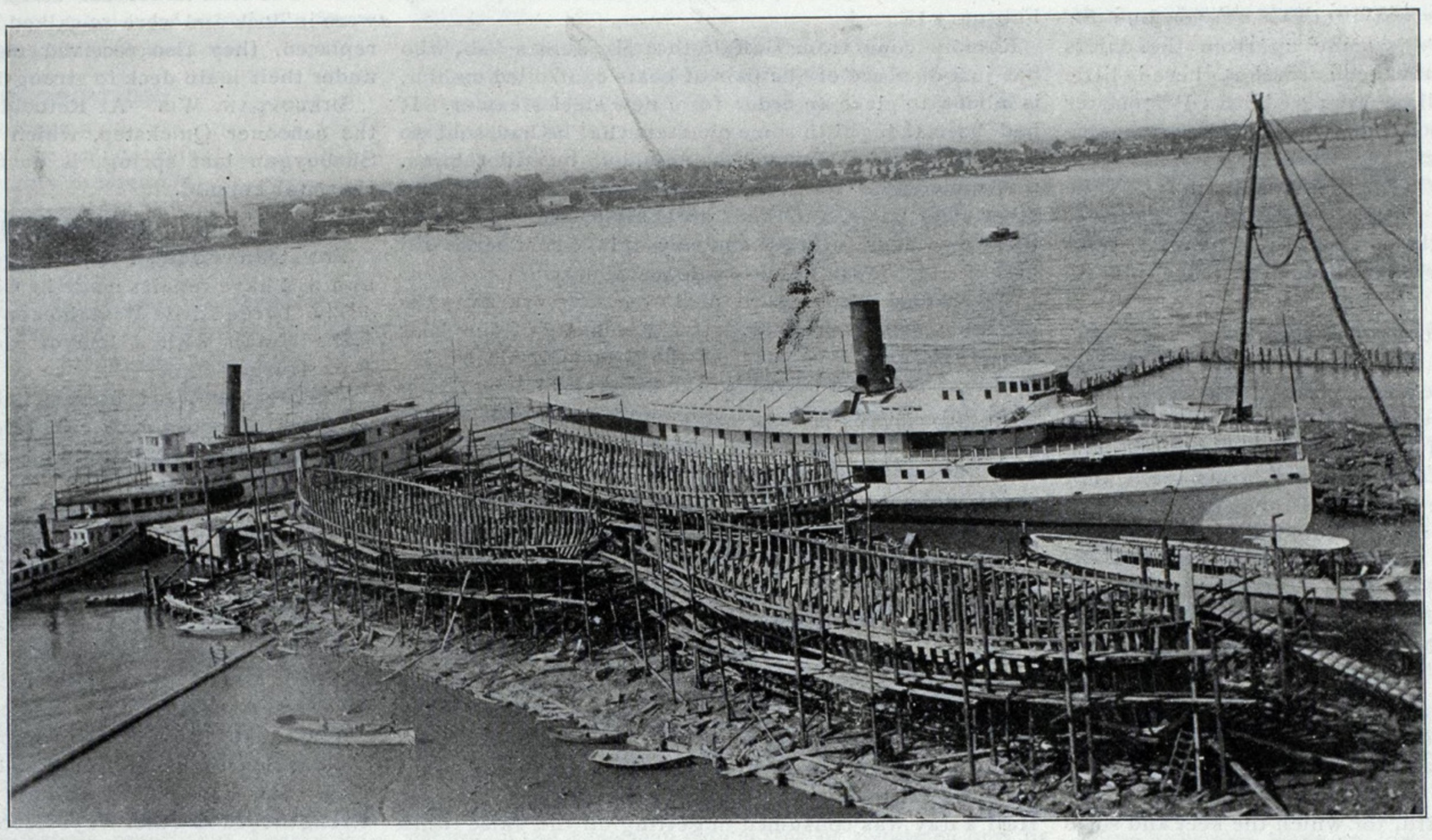
Canadian canals will operate on Sunday for the remainder of the season.

Ashland shipped 61,394 tons of ore last week, and for the season 2,167,310 tons.

THE CRAIG SHIP BUILDING COMPANY'S PLANT.

(ILLUSTRATED.)

There are few better natural sites for shipyards than that possessed by the Craig Ship Building Co., at Toledo. The yard is located on the west bank of the Maumee River, ten miles from Lake Erie, and has 20 feet of water all around its docks. There are berths for four of the largest types of boats, while there is plenty of room for the construction of smaller craft. The wooden shipyard is equipped with every appliance for rapid and good work. The saw mill is equipped with a Scotch gang saw, operating 40 saws at once, also saws of all other types, for ripping or cutting off—all circular—and a jig saw for getting out frames and angle work as required. There are also band saws capable of working stuff at any angle, and changing the angle while the saw is in the plank. There is also a large wooden planer which dresses timber 16x20 inches on all four sides at once. The joiner shop, 25x60 is no less completely equipped.



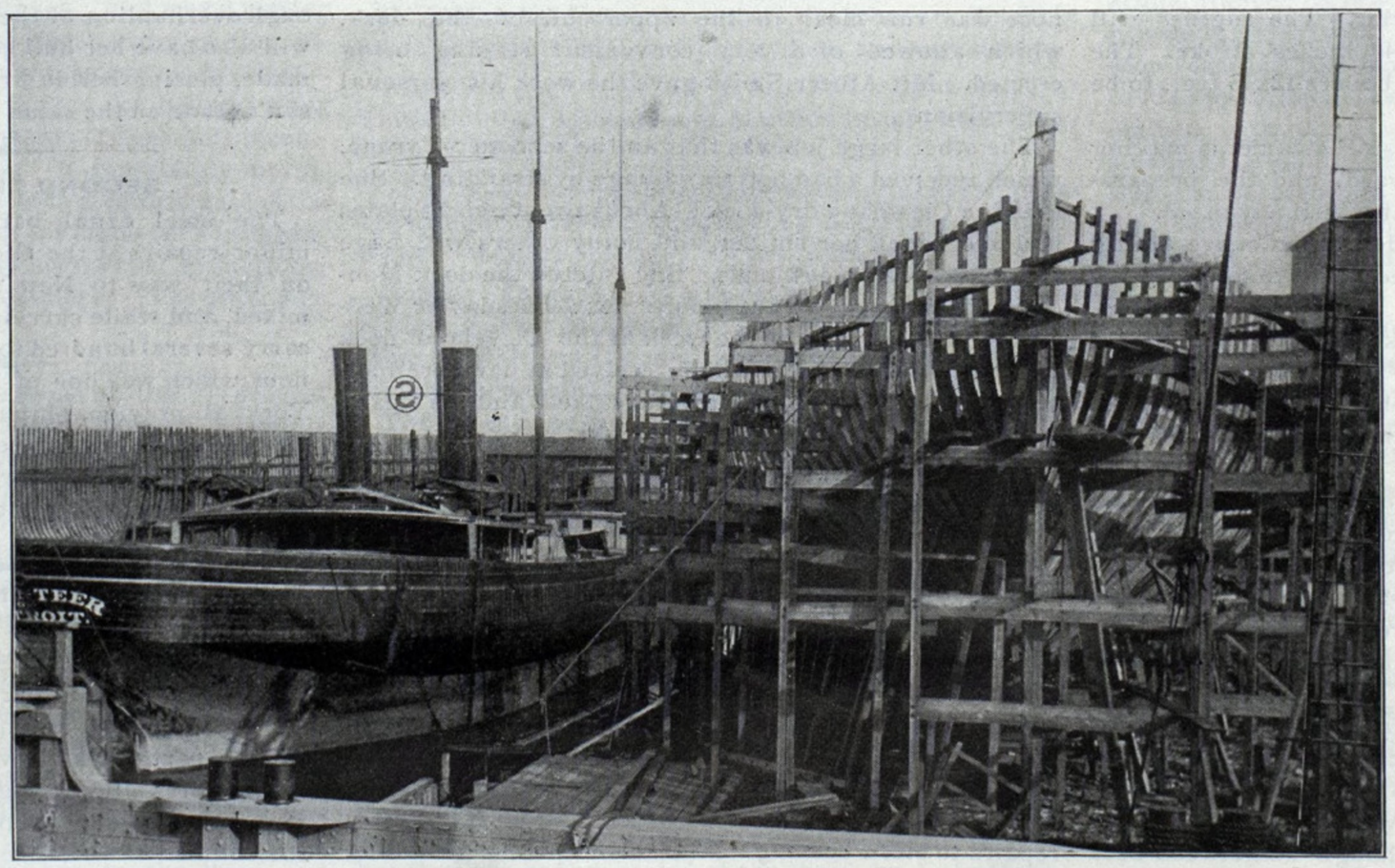
THE CRAIG SHIP BUILDING CO.'S YARD.

The machine shop, 76x190 feet, has a complete plant of modern tools for doing all the work required for steel vessels. The mould loft is above the machine shop, and is 40x190 feet; the floor is entirely clear, the roof being supported by trusses. The blacksmith shop, also 40x190 feet, is one of the features of the plant, being particularly complete. There are ten fires, two steam hammers, and two small furnaces for working special shapes, besides a large furnace for working plates and frames, and fed with oil for fuel. This furnace is capable of handling a plate 8x16 feet. In front of it is a frame bending slab, 50 feet long and 24 feet wide, with arms 20 feet wide and 10 feet long at the end farthest from the furnace, making a sort of T head. There are eighteen engines for various purposes throughout the plant.

The Craig Co. give a great deal of attention to the manufacture of small boats, and have a reputation for handsome models and finish. They have built since midwinter about twenty small boats, part of them equipped with steam, and others with sail.

To get a correct idea of the yard, the upper engraving on the opposite page should be placed contiguous to its vis-a-vis on this page. The vessel shown in frame in the lower engraving on this page is the Shenango No. 2, a steam ferry boat to transport cars between Conneaut, O., and Port Dover, Ont., on which route the Shenango No. 1 is already in service. This boat is very near completion, and is to be placed in service next month.

One of the largest dry-docks on the lakes has just been opened for business at this yard, 400 feet long by 55 feet wide at the bottom, and 100 feet wide at the top. This dock is equipped with centrifugal pumps that will empty it in ninety minutes. Mr. John Craig is president of the company, one son, George L. Craig, being general manager, and another, John F. Craig, secretary.



A RECENT VIEW IN THE CRAIG YARD.

AN UNJUST DELAY.

The delay in acting upon the report of naval examining and retiring boards is causing some discontent among friends and associates of Comdr. Nicol Ludlow. President Cleveland is unusually conservative in the examination of papers, but perhaps he does not fully realize that delay in promotion may be interpreted as a reflection upon an officer. For example, Comdr. Ludlow was unanimously recommended by an examining board for promotion. The President's delay in acting upon this report has given rise to all kinds of reports, some of which are detrimental to the officer's fitness for the grade of captain, when there is no foundation for them. Preparatory orders have been issued to him to command the Boston and he will go to that vessel when she is placed in commission next month, by which time it is believed that his case will be returned to the Navy Department with the chief executive's approval.—Army and Navy Journal.

NOT SO BAD AS REPRESENTED.

As a result of an examination of the Port Royal dock by Commo. Mathews, Chief of the Bureau of Yards and Docks, he recommends that it be accepted, the contractor having completed his contract by remedying the defects caused by bad workmanship. The damages caused by the Amphitrite will be remedied at an expence of $11,000 to the Department, which, having approved the plans, is responsible for their deficiencies. It will be remembered that a naval board reported against these plans and was overruled by Secretary Tracy. The work of repairing this injury has been commenced and will be completed in a few weeks. Secretary Herbert does not share in the distrust of the dock, and will, it is understood, test it with the Indiana as soon as she has had her trial. Commo. Mathews is also convinced after examining the dock that it is capable of accommodating ships of such heavy displacement as the Indiana. He says there is plenty of water over the bar over which vessels have to pass to reach Port Royal from the ocean, there being, he was assured by pilots, something like twenty-six feet of water. The Coast and Geodetic Survey will be asked to make a re-survey of the bar this winter, and it is believed by the officials that their old charts will be found to give a less depth of water than now exists. Seven Port Royal pilots, in a letter to the New York Tribune, say the reason the Amphitrite grounded before entering the dock was because she was 400 feet out of the channel, having no local pilot aboard.

TRADE NOTES.

Napoleon's invasion of Russia will be described in the next installment of Poultney Bigelow's popular history of "The German Struggle for Liberty" in the November number of Harper's Magazine.

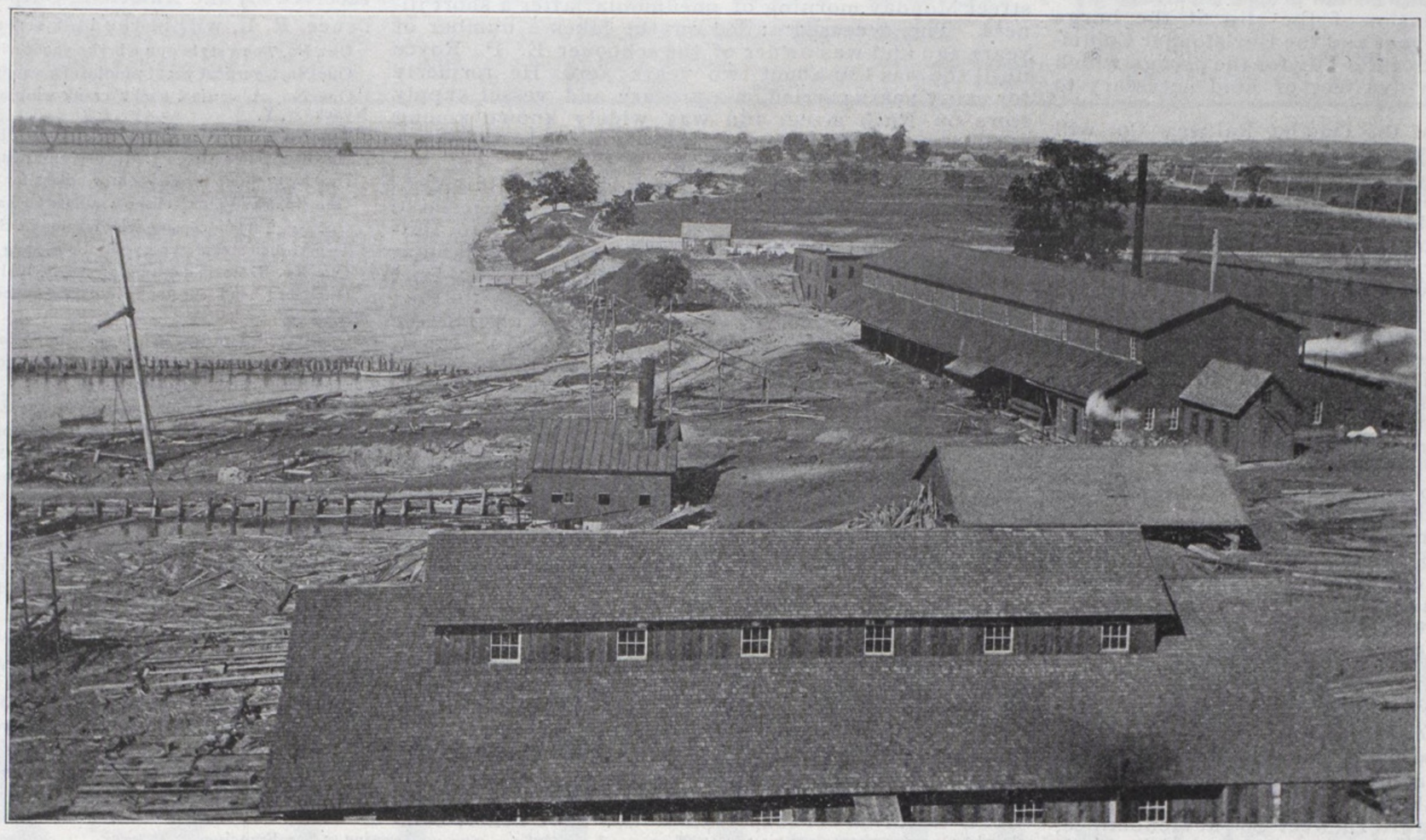
The Continental Iron Works, Brooklyn, N. Y., are making a number of Fox corrugated furnaces for William B. Pollock & Co., Youngstown, O.; Jos. T. Ryerson & Son, Chicago, Ill.; Heipershausen Bros., New York; William Cramp & Sons, Neafie & Levy, and Harlan & Hollingsworth.

The Rochester Machine Tool Works, of Rochester, N. Y., have issued a handsomely illustrated descriptive catalogue and price list of their goods, which include the Acme engine, suitable for small boats, as well as stationary purposes, the Buckley and Braggins water tube boilers, the Buckley atomizer, and iron and bronze propeller wheels for yachts.

The tug Grace of Dunkirk, seized by the Canadians in 1894, on charge of illegal fishing, was sold at Port Colborne last week, William Helwig, one of the original owners, securing the tug for $1,200.

WATER TUBE FIRE BARS.

The idea of water tube fire bars is no novelty, many forms of construction of such having been tried but without any substantial success, failures resulting sooner or later either from the action of expansion and contraction where they have been rigidly fitted, or from the effects of bad circulation. Messrs. Thornycroft have for some time had a launch at work on the Thames fitted with a boiler which has water tube fire bars, and the fire bar portions of the tubes show no signs of burning, while no evil effects have been produced by expansion and contraction, so that the circulation of the water must have been most complete. It resembles the half of a Dar ing water tube boiler. The outer row of tubes form the curved part of the letter D, thus forming a large loop, the bottom part of which isused as the fire bars, whilst the rapid circulation, which is common to all types of the Thornycroft boiler, prevents any trouble from scale. The boiler for the launch developes 60 h. p., its total weight being 12 cwt. It has a great area of 3.3 square feet, and a heating surface of 100 square feet, the steam pressure being 160 lbs.; the launch is 47 ft. long, and is fitted with a single screw placed beyond the rudder, the engine having a 6.25 in. cylinder with 8 in. stroke, and the speed attained reaches 18 miles an hour. The success of this lauuch has induced the War Office to order a shallow draught boat of Messrs. Thornycroft, to be fitted with a water-tube fire bar tubular boiler; the boat is to be 39 ft. long, and to draw 10 in. of water, whilst it will have to travel 14 miles an hour.



THE CRAIG SHIP BUILDING CO.'S YARD.

NAVAL ITEMS.

Some of the Italian war vessels carry oil in their bottoms for fuel.

It is estimated that the British fleet could in the event of war be brought up to 120,000 or 150,000 men.

The trial trip of the Ammen ram Katahdin will not take place before November 1st, as her propellers are bent, and new blades are being made.

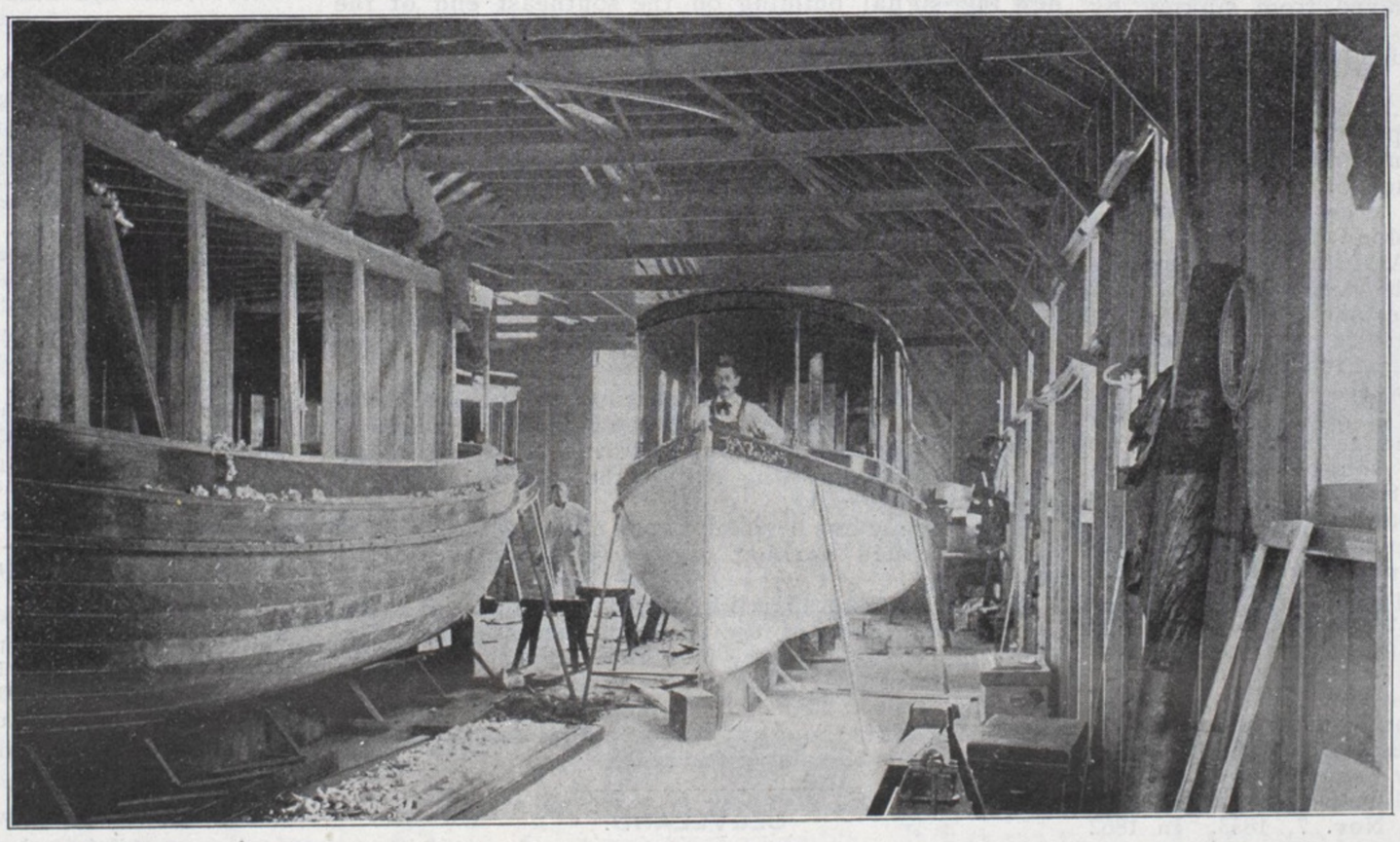
Orders have been issued by the Navy Department to dock the Texas, clean her strainers, and reduce her circulation pumps to four inches in size. She will not be tried again until after the trial of the battleship Indiana.

Queen Victoria has given what is considered a death blow to the ceremony of manning the yards to which the change in the rigging of ships has already given some hard knocks. When her majesty, passing through Portsmouth Harbor the other day, saw the boys of the St. Vincent "dressing" the yards, as their predecessors 300 years before had "dressed" the yards of the ships in the Medway for Queen Elizabeth, she ordered them to discontinue the performance at once.

The trial trip of the battleship Indiana will be noteworthy from the fact that this is the first time a ship has ever been tried that is complete in all respects. In the past it has been customary to try vessels minus their batteries and some of their fixings, the absence of weight being made up for by an additional coal supply. The Cramps made application last spring to Secretary Herbert to try the vessel without her turrets and battery, promising to put a sufficient weight on board to make up for this deficiency. The secretary, upon the recommendation of a board of naval officers, denied the application and informed the builders that the ship must have her battery and turrets placed in position.

A HANDSOME COMPLIMENT.

The MARINE RECORD of the 10th inst. devotes about four pages of its issue to a sketch of the "Port of Lorain," accompanied by cuts of the C. L. & W. officials, the Brown hoists and two large ones of The Johnson Co.'s works. In the center of the first page is a small cut representing a large steamboat and a "pig" off the port. It is a splendid cut, as are all the others. The RECORD deserves credit for its splendid sketch and its good typographical make-up.—Lorain Herald.



BUILDING THE SMALL BOATS.

It has been decided to place the Indiana in commission on November 1st.

NOTES.

PHILADELPHIA owns thirty-five wharves on its two rivers for which it receives an annual rental of $32,-610.10.

ROBERT MCCALLUM, who sailed from New York June 13 last in the 19-foot sloop Richard K. Fox for Queenstown, has been given up for lost, but it is thought by some that, as he was last seen on the Grand Banks when over 60 days out, he may have abandoned the voyage and sought seclusion among the fishermen of Newfoundland. He had only a dog with him.

MR. THOMAS H. WATSON, Naval Architect, Newcastle on-Tyne, has brought out a double sliding scale, by which the displacement, register tonnage, indicated horse-power, and speed of vessels from the dimensions with co-efficients, can be easily and quickly calculated. The size of this slide is such that it can be easily carried in the pocket when traveling, for reference.

MR. SMILLIE, an engineer of Glasgow, has patented a steam pipe which consists of a copper tube around which steel wire is wound so that there is perfect contact between the two metals. Soldering is easily effected by immersing the whole in a fusible alloy, whose melting point is higher than the temperature of the superheated steam. Considering the fact that the ratios of expansion of steel and copper are different it would seem difficult to keep the wire reinforce tight.—Engineer.

THE Waterways Journal, of St. Louis, contains an extended account of the arrival of Com. William Zink, a prominent business man of that city, with his new purchase, the little steam yacht Austria, a sister boat to the Buffalo police boat, both having been built by the Marine Iron Works; but the Austria is fitted with that firm's 1895 pattern of 8x8 balanced piston valve high-speed marine engine. The launch is 50 feet long by 10½ feet beam outside of planking, her depth from keel to covering-board being 51 inches. Her gross tonnage is 13.72 and her net 8.27.

THE new ocean steamship St. Paul, built by the Cramps, of Philadelphia, as a sister ship to the St. Louis, for the International Navigation Co.'s line, on her trial trip off Cape Ann, Mass., Oct. 4, made an average speed of 20.5 knots an hour of almost 88 knots over the government course, and scored another decided success for American shipbuilders. In every respect the trial was a most satisfactory one. It was under the supervision of Comdr. R. B. Bradford, Lieut. Comdr. Seaton Schroeder, Lieut. N. J. K. Patch and Lieut. R. T. Mulligan. The St. Paul left on her first trip Wednesday, the 9th inst.

The Collingwood, Ont., Bulletin has absorbed the Binghamton Argus.

NEWS AROUND THE LAKES.

DULUTH AND SUPERIOR.

Special Correspondence to The Marine Record.

Capt. Joseph Kidd, of the Barge Company, has returned from the east where for several weeks he has been engaged in superintending some repairs to the Joseph L. Colby. Since the Colby was placed in the Atlantic trade, she has never had proper repairs.

The piles for the extension of the slip at the barge works have all been driven, and the Christopher Columbus has been moved out of the way for the dredge which will clear out the forty-five feet of land necessary to launch the new barges.

The mammoth dock of the Omaha Railway Co. will be completed inside of 30 days and Superior will have one of the largest docks on the lakes. The company's docks at Duluth and Washburn will be abandoned when the new dock is finished.

It has been decided to build the new Missaba & Northern dock by day labor. Most of the contracts for material have already been awarded, and actual construction will begin soon. Williams, Daugherty & Upham are making splendid progress at dredging out the slip. About 250 yards of material has to be removed. About 2,000,000 feet of coast timber will be brought from Washington. J. B. Noyes & Co., of Duluth, have the contract for native timber, of which 3,000,000 feet will be wanted. The contract for piling, for which 5,000 sticks ranging from 30 to 60 feet in length will be required, was let to Jacob Zimmerman, of Duluth. S. E. Amour & Grimmer will drive the piling. The contracts for the heavy hardware are divided between the Tudor Iron Works, of St. Louis, and the Marshall-West Co., of Duluth. The contract for spouts and fixtures was let to the American Steam Barge Co., on a bid of about $26,000. The contracts for the remainder of the dock machinery have not yet been awarded.

CHICAGO.

Special Correspondence to The Marine Record.

Ex-Commodore Bradwell, of the Columbia Yacht Club, has sold the big sloop yacht Hattie Bradwell, the largest single sticker on Lake Michigan, to John W. Wells, vice-president of the Girard Lumber Co., at Menominee, Mich.; the price was $3,800.

The tug A. S. Allen, owned by Capt. Louis Hohmann, was discovered on fire about 3 o'clock Sunday morning. She was lying at a dock near the Indiana Street bridge, and had no one on board at the time. The fire started in or under the pilot house, which was badly burned, also the deck frames and deck under and forward of the pilot house. She was insured.

The tug A. L. Ward, when going up the North branch of Chicago river, Saturday morning, collided with the canal boat Transfer No. 1 lying at the Northwestern elevator. The tug ran her bow about five feet into the stern of the canal boat. About 1,000 bushels of the cargo of wheat was damaged by the water which poured into her. She was fortunately saved from sinking by her bulkheads.

The schooner John Miner, which has been tied up at the dock in the rear of George B. Carpenter & Co.'s ship chandlery store all summer, is being fitted out by Capt. John Freer, who was appointed master of her, Capt. J. L. Higgie, her owner, intends to take advantage of the good grain freights now offering.

Captain Kaufman and the crew of the wrecked schooner Otter arrived here Monday morning from Sturgeon Bay on the steamer Atlanta. The schooner was loaded with beach and maple cord wood at Jackson port bound for Chicago. She became water-logged in the heavy SE. gale last Thursday and was driven ashore in White Fish Bay, Wis., at 10 o'clock Thursday morning. The captain and crew were rescued by the Sturgeon Bay life-saving crew at 2 o'clock Thursday afternoon. The stern of the schooner having broken up before they were taken off, they sought shelter in the forward part of the schooner. She is now lying on the beach with her stern and starboard side all out of her, and what remains of her and her cargo is buried eight feet in the sand. Her sails, running gear, etc., were saved and will be brought to Chicago by the schooner Dewey. She was built in 1863 at Freeport, O., and was owned by John Cæsar, of Chicago, who also owned the cargo. There was no insurance on vessel or cargo.

Anson A. Bigelowof the well known lumber firm of Bigelow Brothers, and an old and highly respected citizen of Chicago, died at his residence 2026 Michigan avenue at 5:30 o'clock Sunday afternoon, of typhoid dysentery, after about 10 days illness. He was born in Washington county, New York, Nov. 7, 1833. In 1862 he started in the lumber business in Chicago with his brothers Charles and William H., under the firm name of Bigelow Bros., and was an active member of the firm at the time of his death. The firm owns large mills and timber interests at Washburn, Wis., Lake Superior. They are also owners of the steamer Madagascar, and consorts Fanny Neil, Stephenson and Parana. The deceased was respected by all who knew him as a man of the highest integrity, and his loss will be keenly felt and sincerely regretted by his many friends. He leaves a widow and daughter, and one son, Nelson P. Bigelow.

The schooner Cora A. loaded 25,000 bushels of corn Tuesday for Midland, at a 3c freight.

Capt. J. A. Calbick went to Sturgeon Bay Friday to look after the interests of the underwriters who had insurance on the steamer White & Friant and consort, Lizzie A. Law and their cargoes of grain which had been on the shoal off White Fish Point, Wis., during the heavy gale last Thursday. The White & Friant was found to be leaking, and the Law had five feet of water in her hold. Some of the cargo of the Law was taken out, and the steamer and her consort, with a tug went to Milwaukee, arriving there on Sunday. They will go into dry-dock there for a survey and repairs.

Martin McNulty died at his residence 1234 N. Clark street Monday morning of pneumonia, after a short illness. The deceased sailed on the lakes a number of years ago and was owner of the schooner E. P. Royce until she was lost about two years ago. He formerly for many years carried on a grocery and vessel supply store on Rush street and was widely known among marine men. He leaves a widow and two daughters and two sons, well provided for.

J. G. Keith & Co. chartered the steamer Elfin-Mere for corn to Buffalo at 3¾c; the steamer Majestic corn to Buffalo at 4c; the steamer C. S. Parnell, barley to Buffalo at 3½c; steamer Ketchum No. 2 corn to Midland at 3½c; schooner J. H. Mead and A. Mosher oats to Port Huron at 2¼c; schooner Minnie Slausor oats to Port Huron at 2c. Palmer, Cook & Calbick chartered the steamer Fred Pabst for corn to Buffalo at 3½c. P. H. Fleming & Co. chartered the steamer Norwalk for 60,000 bushels corn to Buffalo, at 4c; the schooner Mediator for corn to Port Huron at 2⅝c. J. J. Rardon & Co. chartered the steamer City of Cleveland for 80,000 bushels corn to Buffalo at 3½c; the steamer W. A. Avery 120,000 bushels clipped oats to Buffalo at 2¾c.

The schooner A. Mosher loaded 27,435 bu. of oats Tuesday for Sarnia at a 2¼c freight. This was her first cargo of grain this season.

MANITOWOC.

Special Correspondence to The Marine Record.

The Manitowoc Steam Boiler Works are building a Scotch boiler 5½ ft. by 7 ft. for the tug Eaton of Milwaukee.

Capt. H. C. Albrecht and Joseph Davidson, of Milwaukee, held a survey on the steamer Keystone in Burger & Burger's dock last week, and ordered necessary repairs done.

The Goodrich Transportation Co. have nearly completed their new warehouse, office and waiting room at their dock. The warehouse is of brick 106 ft. by 173 ft. office and waiting room 25 by 37. The office and waiting room will have hardwood finish and will be handsomely fitted and furnished, and will be lighted by 16 incandescent lights. There are 4 arc lights in the warehouse and 2 on the dock. The company are also building a shed roof 36 by 37 feet over their dock at the west end of the warehouse and they have also enlarged their coal dock 60 ft. by 60 ft. C. F. Canright, the company's agent here feels very proud of his new office and the new premises and will see that everything is kept in good order.

Mr. John Jaffray, of Detroit, has nearly completed the new fog signal building on the southeast end of the new breakwater, which is 400 feet to the eastward outside the north pier and is 400 feet long. There will be a small lantern exposed on the east end of the fog signal building which will make a range with the former range to the harbor. Mr. Jaffray is also building a new double dwelling for the light house keepers, on the site of the old light-house dwelling.

The schooner Evaline was sold at marshall's sale last Thursday for $125 to Leathem & Smith, of Sturgeon Bay, who have a big wrecking bill against her.

ASHTABULA HARBOR.

Special Correspondence to The Marine Record.

Boats which keep in the middle of the channel have no trouble in entering this port, but there are ridges of rock on each side of the channel left by the dredges, and several boats, by getting out of the channel, have got in o trouble recently.

Capt Devney has been kept very busy at his shipyard of late, the men working night and day on vess l repairs

The estimates prepared by the Lake Shore and Pennsylvania engineers of the dredging necessary to complete the proposed twenty-foot channel at this harbor are as follows: 27,772 yards of rock at $1, $27,772; 56,116 yards of earth at 20 cents, $11,223.20. Total estimate, $38,995.20. It is thought that the actual cost will vary but little from the above figures.

CLEVELAND.

The Ohio & Pennsylvania Coal Co., has just added 100 new 30-ton gondola cars to its equipment. These are equipped with Janney couplers, and will be operated between this company's mines in the two states and Cleveland.

Condit, Fuller & Co. are putting in new planking and giving other extensive repairs to their dock just above Main street bridge.

The sandsucker S. Neff began on Thursday (17th) morning the work of pumping out the steamer V. Swain, which was decided by the U. S. Court of Appeals to be the property of the underwriters. The Swain lies near the head of the old river bed, not far from the Ship Owners' dry-dock, and since filling with water has been somewhat of an obstruction. When pumped out she will be shoved further up on the bank. She will probably be dry-docked soon, her machinery taken out, and the hull converted into a tow barge, although all this will probably occur after the wreck itself has been disposed of by the underwriters.

A SNUG LIST OF ORDERS.

The most thorough and practical indorsement that could be given is found in the following list of orders received by the American Ship Windlass Co., of Providence, R. I., within the last six months.

One No. 7 new style pump brake yacht windlass for barge Whitestone.

One No. 3 vertical yacht windlass for yacht Alcedo, Philadelphia.

One No. A vertical yacht crank windlass for yacht Huntress, built at Nyack, N. Y.

Two No. 5 new style steam capstan windlasses and two No. E. steam capstans for steamers Simon J. Murphy and Katahdin, building at West Bay City.

One No. 3 pump brake yacht windlass for yacht Marietta.

One No. 5 half pump brake windlass for barge No. 4, Norfolk, Va.

One No. 2 steam capstan windlass for U. S. light-house tender Pansy.

Two 25-inch steam gypseys for U. S. snag boat Roanoke.

One No. B. steam capstan for tug B. B. Inman.

One No. 1 hand capstan windlass shipped to G. M. Josselyn & Co., San Francisco.

One set of wharf drop gearing for the Wilmington Steamboat Co., Phil'a.

One steam towing machine for steel schooner Tyrone, built at Cleveland, or the American Transportation Co.

Two No. E. dock steam capstans for the Erie Coal Transfer Co.

One dock steam gypsey for dredge building at Pittsburg, Pa.

One steam towing machine for barge No. 58 of the Standard Oil Co.

Three No. F. dock steam capstans for San Francisco.

One No. 3 new style hand pump brake windlass and two No. B bar capstans for the Jackson & Sharp Co.

One No. B. friction gypsey pump brake windlass for yacht Princess.

One No. 7 new style pump brake yacht windlass for barge Talisman.

Twelve sets of wharf drop gearing for the Boston & Philadelphia S. S. Co, at Philadelphia.

One No. 000 yacht crank capstan for yacht Helena.

One No. 6 steam pump brake windlass for S. S. Curacoa, building for Boulton, Bliss & Dallett.

One No. 7 new style steam capstan windlass and one No. D. dock steam capstan for steamer building for the Cleveland & Buffalo Transit Co., at Wyandotte, Mich.

One No. 3 new style steam capstan windlass for U. S. revenue steamer Walter Forward.

One tug boat windlass with iron towing bitts for U. S. tug Unadilla, building at San Francisco.

One No. 00 bronze yacht crank capstan for yacht at Newport, R. I.

One No. A. steam capstan for steamer Bart E. L. Molo, Lyons, Iowa.

One No. A steam capstan for river steamer for the Oregon Railway & Navigation Co.

One No. 5 new style hand pump brake windlass and one No. D. bar capstan for bark Kryolite, building at Parrsboro, N. S.

One steam towing machine for tug International, of the Philadelphia & Reading R. R. Co.

One naval hydraulic capstan for the canal at Cascade Locks, Ore.

One dock steam gypsey for the Phosphate Mining Co.

Four No. 8 new style steam capstan windlasses and four No. E. steam capstans for steamers Nos. 112, 113, 114 and 115, building at West Bay City.

One No. 1 new style hand pump brake windlass for U. S. schooner Matchless.

Three No. 6 new style steam capstan windlasses, three No. E. steam capstans, and three steam towing machines for barges Nos. 17, 18 and 19, buildt ing at Chicago.

One No. 6 new style steam capstan windlass, and one No. E. steam capstan for steamer No. 20, building at Chicago.

One 18-inch steam gypsey for tug Margaret J. Sanford, Jersey City.

One pair 6x8-inch engines for the Philadelphia Engineering Works for starting large stationary engine.

One No. 4 hand pump brake windlass, and one No. C. bar capstan for schooner building at Rockland.

One steam attachment to windlass on barge Felix.

One No. 4 new style pump brake yacht windlass for yacht Free Lance.

One No. 3 hand capstan windlass for U. S. revenue bark Chase.

One No. 8 new style steam capstan windlass, one No. E. steam capstan aft and one No. E. dock steam capstan to be placed amidship for steamer building at Cleveland.

One No. 5 new style steam pump brake windlass for steamer buiiding for the Hudson River Navigation Co.

One No. 3 new style steam pump brake iron towing bitt windlass, one steam towing machine and one No. F capstan aft for tug building by the Wm. Cramp & Sons' Ship & Engine Building Co., for the Philadelphia & Reading R. R. Co.

One No. 5 new style steam capstan windlass for steamer building for the Montreal Transportation Co.

One 20-ton winch for the Winsboro Granite Co.

One No. 10 new style steam pump brake windlass, and one No. F steam capstan aft for steamer building for the Plant Line.

Twelve yacht capstans shipped to G. T. Soley & Co., Liverpool, England, for different yachts in Great Britain.

In addition to the above orders the company have sold hundreds of gypsey windlasses, hand capstans of all kinds, anchors, barge winches, one and two speed hand winches, centre board winches, etc.

MANCHESTER SHIP CANAL.

The traffic returns of the Manchester ship canal for August are very satisfactory, showing an increase of about 40 per cent on seagoing and 25 per cent on barge business. For the eight months of 1895, the sea-going business was 690,206 tons, with a revenue of £77,005, as compared with a tonnage of 387,829 and a revenue of £47,995 for the same portion of 1894, and the barge traffic being 160,303 tons and £3,083 revenue, against 142,111 tons, and £1,982 for the corresponding period last year.

WILLIAM L. BROWN, President.
WALTER F. COBB, Vice President and Treasurer.
W. I. BABCOCK, Manager.
O. R. SINCLAIR, Secretary and Asst. Treas.

Chicago Ship Building Co.

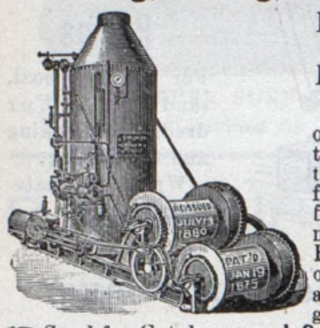
STEEL SHIPBUILDERS and DRY DOCK PROPRIETORS,

DRY DOCK AND YARDS:
101st Street and Calumet River.

LONG DISTANCE TELEPHONES:
SHIP YARD & DRY DOCK OFFICE, "SOUTH CHICAGO 40."
CHICAGO OFFICE, 1013 ROOKERY, "MAIN 3447."

Station S, CHICAGO, ILL.

Hoisting, Mining, Bridge Erecting,

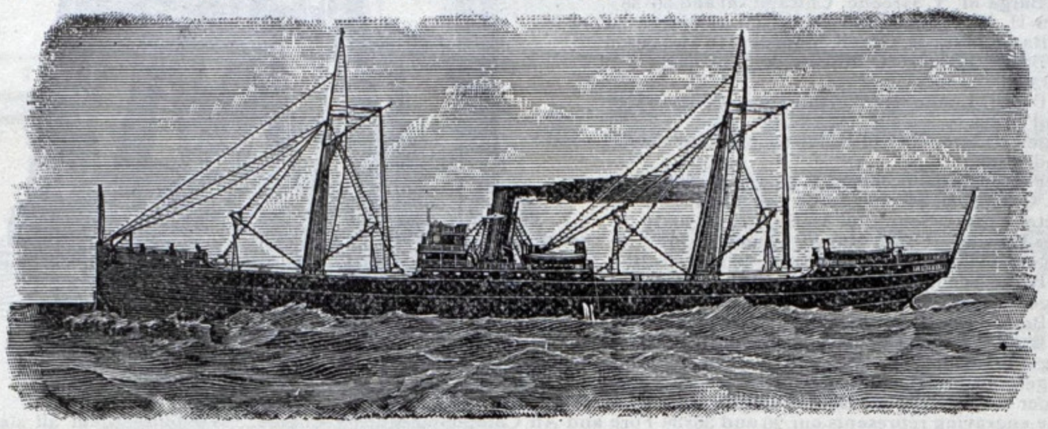


Dock Build'g, Pile Driving, Coal Hoisting and Quarry Engines

of any power, sugar cane transferring engines, transferring machines for depositing cane from car to carrier, with my improved Patent Friction Drums, with or without Boilers. Any amount of reference given. Established 1870.

Send for Catalogue. **J. S. MUNDY**, Newark, N. J.
1741 Market St., Philadelphia, Pa.
22 Light St., Baltimore, Md.
117 Water St., Pittsburgh, Pa.
249 South Jefferson St., Chicago, Ill.
715 North Second St., St. Louis, Mo.
39 Magazine St., New Orleans, La.
34 Fremont St., San Francisco, Cal.
85 Front St., Portland, Oregon.
Fourth & Wakouta Sts., St. Paul, Minn.
218 Congress St., Boston, Mass.

F. W. WHEELER & COMPANY.,



BUILDERS OF ALL KINDS OF

IRON, STEEL AND WOODEN SHIPS,

FOR LAKE OR OCEAN SERVICE.

West Bay City, Mich.

F. W. WHEELER, Prest. E. T. CARRINGTON, V.-Prest
C. W. STIVER, Secretary & Treasurer.

FRONTIER IRON WORKS,

MARINE ENGINES,

DETROIT, MICH.

INCORPORATED 1794.

Insurance Company of North America.

CAPITAL, PAID UP IN CASH, - $3,000,000.00.
ASSETS, - - - - 9,562,599.92.

CHARLES PLATT, President.
EUGENE L. ELLISON, 2d Vice President.
WILLIAM A. PLATT, Vice President.
GREVILLE E. FRYER, Sec'y and Treas.
JOHN H. ATWOOD, Assistant Secretary.

Lake Marine Department.

GEORGE L. McCURDY: MANAGER, CHICAGO, ILL.

MARINE AND INLAND INSURANCE.

Atlantic Mutual Insurance Co.,

Organized 1842. Office 51 Wall Street, NEW YORK.

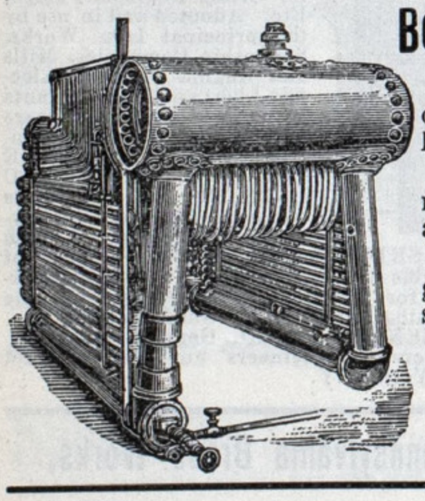
Insures against Marine and Inland Transportation Risks and Issues Policies making Loss Payable in England.

Assets over $10,000,000 for the Security or its Policies.

The profits of the Company revert to the assured, and are divided annually upon the premiums terminated during the year; thereby reducing the cost of insurance. For such dividends, certificates are issued bearing interest until ordered to be redeemed, in accordance with the charter.

J. D. JONES, Pres. W. H. H. MOORE, Vice Pres. A. A. RAVEN, 2d Vice Pres. J. H. CHAPMAN, Sec.

Boyer's Patent Sectional Water Tube Boilers



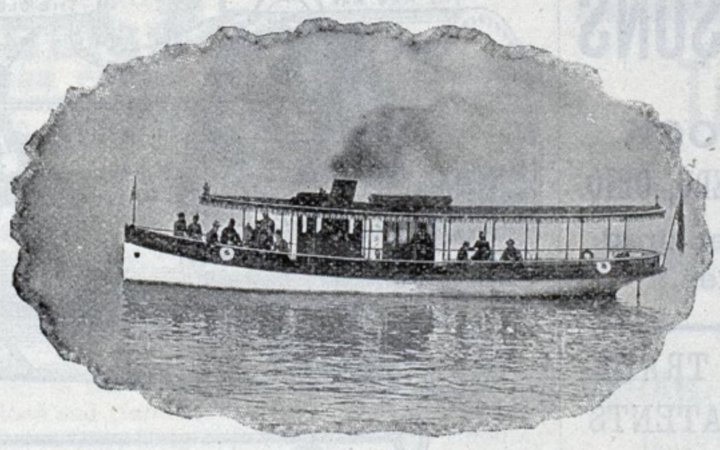
These rapid Steaming Boilers require less room, occupy less space in width, height and length; weigh less than any other.

Have short, perfect circulation, no dead ends, no joints in the fire, and any engineer can get at all parts of it.

The Steam Yacht "Rex," having 25 square feet grate surface and 1000 square feet heating surface, steamed 144 miles on 1000 lbs. of coal.

Address:

L. BOYER'S SONS,
90 Wall St., New York City.



Marine Iron Works,

Clybourn & Southport Aves.,

CHICAGO.

BUILDERS OF

STEAM YACHTS,
MARINE ENGINES,
MARINE BOILERS.

Write for List of Boats for Sale.

MARINE VALVE OIL — FOR INTERNAL LUBRICATION.

RENOWN ENGINE OIL — FOR EXTERNAL LUBRICATION.

Marine Valve, Renown Engine, Eldorado Engine, Crank Case, Victor Signal, Dark Lubricating, Mineral Seal, Head Light, Arctic Cup Greases, and Lard Oils,

—CARRIED IN STOCK AT THE—

Standard Oil Company's Marine Depot,

TELEPHONE 77. 123 River Street, CLEVELAND, O. MAIN OFFICE TELEPHONE 682.

ALSO FOR SALE BY **STANDARD OIL CO.,**

Chicago, Ill., No. 5 Wabash Ave.
Racine, Wis.
Milwaukee, Wis., Broadway & Mason.
Sheboygan, Wis.
Manitowoc, Wis.
Green Bay, Wis.
Marinette, Wis.
Oshkosh, Wis.
Duluth, Minn.
West Superior, Wis.
Hancock, Mich.
Marquette, Mich.
Buffalo, N. Y.
Sault Ste. Marie, Mich.
West Bay City, Mich., M. C. Ry. & 10th St.
Saginaw, Mich., Eighth & Sears Sts.
Detroit, Mich., 46 Jefferson.
Toledo, O., Summit & Monroe Sts.

Atlantic Refining Company, French & 16th Sts., Erie, Pa.
D. Robeson, Port Huron, Mich.
W. S. McKinnon, Ashtabula Harbor, O.
Hull & Rand, Huron, O.
Edward Brammall, Benton Harbor, Mich.
Baby & Dale, St. Clair, Mich.
N. C. Alten, Lorain, O.
A. F. Harrington, Conneaut Harbor, O.
A. H. McGonagil, South Chicago, Ill.
Marine Supply Co., Fairport, O.
F. Kranz, Sandusky, O.
The M. I. Wilcox Cordage & Supply Company, Toledo, O.

MARINE ENGINEERING

(Stationary and Locomotive Engineering), Electricity, Architectural and Mechanical Drawing, Plumbing, Heating, Mining, English Branches, etc.

TAUGHT BY MAIL.

Engineers can qualify to obtain licenses. To enroll only necessary to know how to read and write. Circular **free.** State subject you wish to study.

The International Correspondence Schools, SCRANTON, PA.

Walter H. Oades' Shipyard,

MARINE RAILWAY AND SHEERS,

Ship Carpenters, Calkers & Joiners.

Working on reasonable terms.

Yard: Foot of Dubois Street, DETROIT.

Telephone 1670, 3 rings.

ABRAM SMITH. ANGUS H. SMITH.

ABRAM SMITH & SON,

SHIP-BUILDERS,

ALGONAC, MICH.

Wooden Ships of any description built, rebuilt, or repaired.

Send for specifications, prices, etc.
Good slips for laying up boats.

A. J. MORSE & SON.

DIVING APPARATUS

140 CONGRESS ST. BOSTON.

A. GILMORE & SONS

TOLEDO DRY DOCK.

Telephone No. 157, TOLEDO, OHIO.

Vessels Docked and Repaired at Reasonable Rates.

PATENTS, CAVEATS, TRADE-MARKS, DESIGN PATENTS COPYRIGHTS, Etc.

CORRESPONDENCE SOLICITED.

John A. Saul, Atlantic Building,
Washington, D. C.

ROBERT E. HILLS,

STEAM FITTING AND HEATING

Wrought Iron Pipe and Fittings, Engineers' Supplies; General Jobbing Work Done Promptly.

Also Proprietor of North Side Iron Works.

57 & 59 North Wells St. CHICAGO, ILL.

ESTABLISHED 1871. INCORPORATED 1893.

MONTAGUE IRON WORKS CO.,

MANUFACTURERS OF

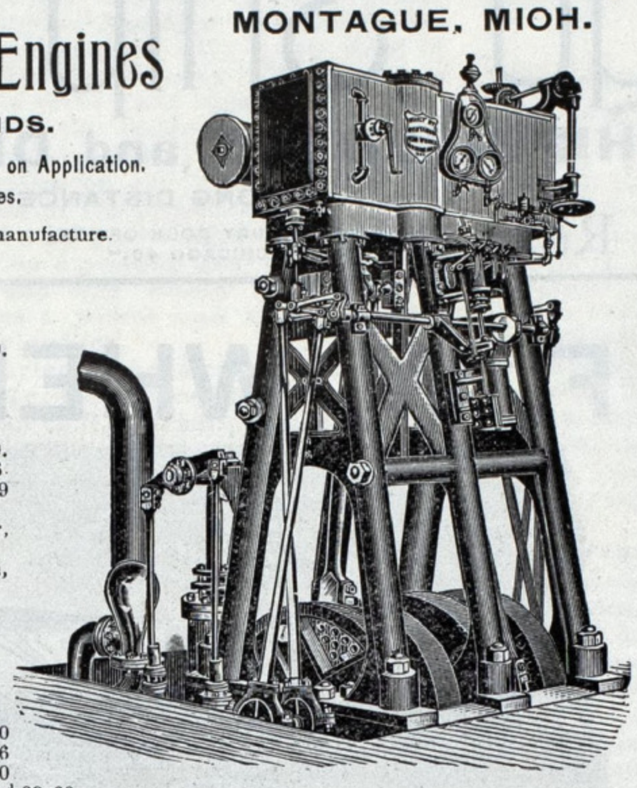
Marine and Stationary Engines

AND BOILERS OF ALL KINDS.

MONTAGUE, MICH.

Heavy Castings a Specialty. Prices Quoted on Application.

Fore and Aft Compound Marine Engines.

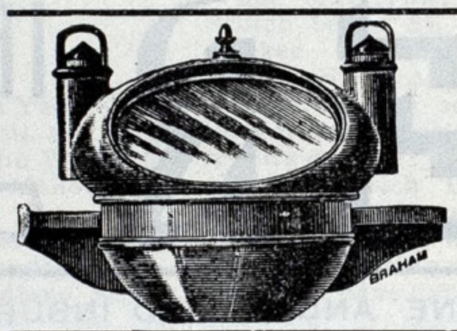


The Engines in the following boats are of our manufacture.

Tug, Hunter, Chicago, 15 and 28x22.
Tug, Tacoma, Chicago, 16 and 30x24.
Tug, Zenith, Duluth, 18 and 36x30.
Steamer Glenn, South Haven, 14 and 28x20.
U. S Survey Steamer, W. S. Hancock 12 and 21x20.
Steamer Pine Lake, Charlevoix, 16 and 30x24.
Passenger Steamer Pilgrim, St. Clair, 14 and 28x20.
Steam Barge Iona, Grand Haven, 24 and 46x42.
Steam Barge M. T. Greene, Chicago, 20 and 36x36.
Steamer H. W. Williams, South Haven, 18 and 36x30.
Steam Barge Mark B. Covell, Manistee, 18 and 30x26.
Steam Barge Isabella J. Boyce, Michigan City, 19 and 32x26.
Steam Barge Luella H. Worthington, Cedar River, 19 and 36x30.
Passenger Steamer City of Kalamazoo, South Haven, 20 and 40x30.
Steamer Oval Agitator, Chicago, 14 and 28x20.
Tug E. G. Crosby, Muskegon, 16 and 30x24.
Tug Peter Coates, Sault Ste. Marie, 10 and 20x16
Steamer Lorain L, South Haven, 12 and 21x16.
Passenger Steamer Lotus, Escanaba, 16 and 30x24.
Steam Barge Sachem, Grand Haven, 21 and 38x36.
Passenger Steamer Bon Ami, Saugatuck, 14 and 28x20
Steam Barge Charles A. Street, Chicago, 20 and 36x36
Steam Barge Edward Buckley, Manistee, 18 and 36x30
Passenger Steamer E. G. Maxwell Pentwater, 14 and 28x20.
Passenger and Freight Steamer Bon Voyage, Saugatuck, 16 and 30x26.
Passenger and Freight Steamer Mabel Bradshaw, Muskegon, 16 and 28x26

The engraving represents our 20 and 36x36 Fore and Aft Compound Marine Engine. We build them all sizes and guarantee them to give satisfaction. Prices furnished on application.

MONTAGUE IRON WORKS CO., Montague, Mich.



FRANK MORRISON, COMPASS ADJUSTER

AND MANUFACTURER OF

NAUTICAL INSTRUMENTS.

COMPASSES. BAROMETERS, PATENT LOGS, BINNACLES, STEAM GAUGES, MARINE GLASSES, ENGINE INDICATORS.

All Nautical Instruments Carefully Repaired.

Office with Upson, Walton & Co., 161 River St., Cleveland, O.

J. H. OWEN, Prest., Chicago. F. H. VAN CLEVE, Sec'y, Escanaba. Capt. GEO. BARTLEY, Supt., Escanaba.

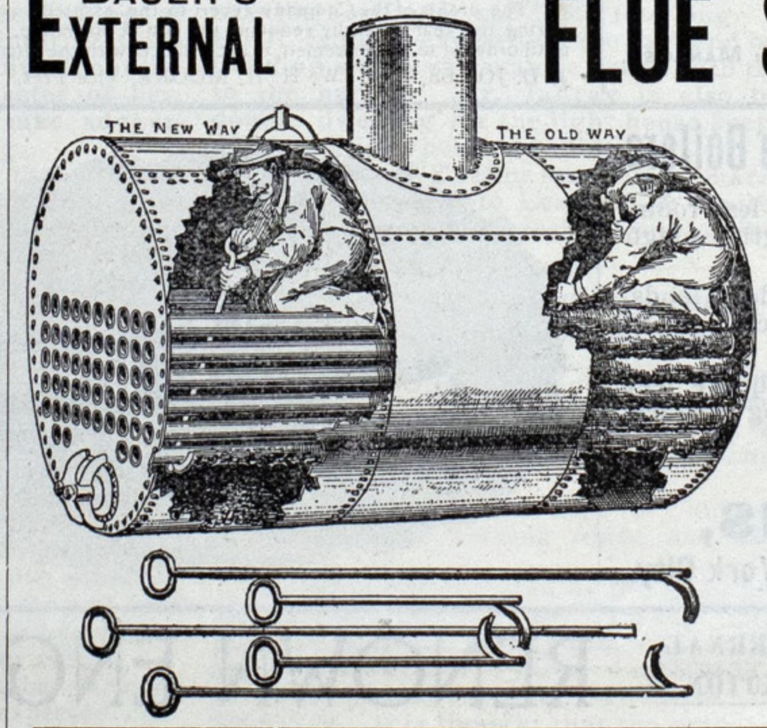
ESCANABA TOWING & WRECKING CO., Escanaba, Mich.

Tugs, Lighters, Steam Pumps, Hawsers, Hydraulic Jacks and Diving Appliances always ready.

TUG MONARCH—Engine Compound, Cylinder 16 & 30 in. diameter, 30 in. Stroke, Steam Pressure allowed, 125 lbs.
TUG DELTA—Cylinder 20 by 22, Steam Pressure allowed, 105 lbs.
TUG OWEN—Cylinder 20 by 20, Steam Pressure allowed, 104 lbs.

CENTRIFUGAL PUMPS. SEVEN AND FOURTEEN INCH SUCTION.

BAUER'S EXTERNAL **FLUE SCRAPERS.**



THE only device that will effectually **remove Scale** and **Sediment** from Flues **without injury** to flues or boiler.

Made of tool steel, hardened, concaved and ground, producing two sharp edges, and can be worked either way.

A Set will last about 10 years.

Used in **more than 90 different cities** and give **universal satisfaction.**

A **Shell Scraper** and a **patented inside flue cleaner** given with each set.

Send **outside diameter** of your flues for a trial set.

E. RAYFIELD,
Sole Manufacturer,
373 Dearborn St., Chicago.

TREGURTHA SAFETY WATER-TUBE BOILERS

Single, Compound and Triple Expansion Engines.

STEAM YACHTS AND LAUNCHES.

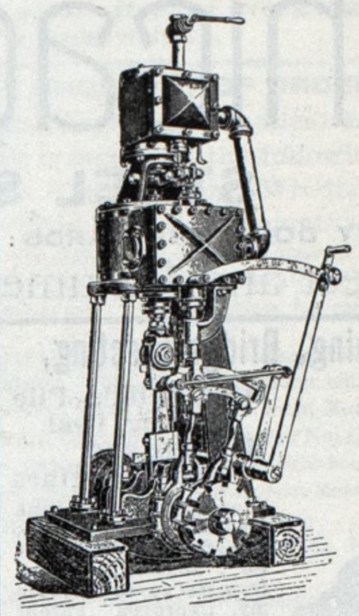
New and Second-Hand Launches in Stock.

MURRAY & TREGURTHA,

West First Street, foot of F Street,
SOUTH BOSTON, MASS.

Send three 2c. stamps for Catalogue.

MARINE ENGINES



SINGLE AND COMPOUND.

5 TO 200 HORSE-POWER. These engines are high-class in workmanship and material and moderate in price.

Send for cuts, description and prices.

Centrifugal Pumps

For raising coal, sand, &c. For dredging, wrecking and circulating.

Write for catalogue.

MORRIS MACHINE WORKS,

Baldwinsville, N. Y.

HENION & HUBBELL, Agents,
61-69 North Jefferson St., Chicago, Ill.

Baker's Quadruple Grip Anchor

PATENTED.

AGENTS WANTED.

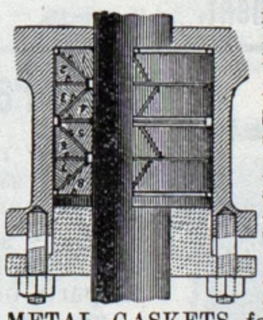
Watertown Brass & Mfg. Co.,
WATERTOWN, N. Y.

Send Stamp for Catalogue.

Mfrs. Yacht, Boat and Canoe Hardware.
Special Work a Specialty.
Boat Rails, Stanchions, Etc.

MENTION THIS PAPER.

Katzenstein Self-Acting Metal Packing



for Piston Rods, Valve Stems, Etc., of every description, for Steam Engines, Pumps, Etc. Adopted and in use by the principal Iron Works, Steamship Companies, Mills and Engine Builders, Electric Light and Power Plants within the last twelve years in this and foreign Countries. Also FLEXIBLE TUBULAR METALLIC PACKING for Slip-Joints on Steam Pipes and for Hydraulic Pressure. Also METAL GASKETS for all sizes and shapes of flanges. Double-Acting Balanced Water-tight Bulkhead Doors for Steamers. Also Agents for the McColl-Cumming Patent Liquid Rudder Brake.

L. KATZENSTEIN & CO., General Machinists, Brass Finishers and Engineers' Supplies, 357 West Street, New York, N.Y.

The Pennsylvania Brass Works,

ERIE, PA.

Automatic Piston or Mocking Bird Whistles. Special Whistles made to order. Penna. Steam Flue Cleaner. Water Gages, Penna. Gage Cocks, Air Cocks, Oil Cups, Brass and Bronze Castings a Specialty.

E. G. ASHLEY,

CHOICE FAMILY GROCERIES.

ALSO ALL KINDS OF

Fresh, Salt and Smoked Meats.

Vessel orders attended to day and night. Goods delivered by Steam Yacht "Maggie D."

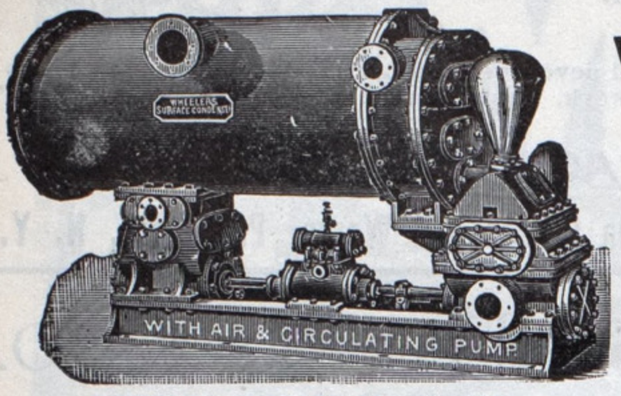
36 & 38 Summit Street, TOLEDO, O

Wheeler Condenser & Engineering Co.,

39 & 41 CORTLANDT STREET, NEW YORK.

WHEELER'S IMPROVED SURFACE CONDENSERS

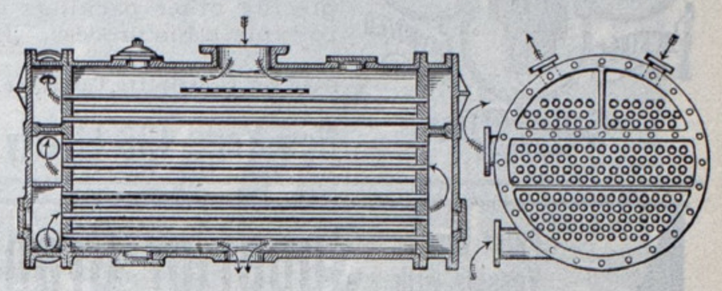
Mounted upon Combined Air and Circulating Pumps.



WHEELER SURFACE CONDENSER,
Mounted on Combined Air and Circulating Pumps.

Sole Proprietors and Manufacturers of the
WHEELER STANDARD SURFACE CONDENSER.
WHEELER ADMIRALTY SURFACE CONDENSER.
WHEELER LIGHT HALL SURFACE CONDENSER.
VOLZ PATENT COMBINED SURFACE CONDENSER AND FEED-WATER HEATER.
WHEELER FEED-WATER HEATER, AIR AND CIRCULATING PUMPS.
EDMISTON PATENT FEED WATER FILTER.

Send for Pamphlet, "Machinery for Small Boats, etc."



PATENT COMBINED SURFACE CONDENSER AND FEED-WATER HEATER.

P. M. CHURCH & CO.

SAULT STE. MARIE, MICH.,

Ship Chandlery, Hardware, Paints, Oils,

And all classes of

VESSEL SUPPLIES.

Coppersmith Shop in connection.

Corner Portage and Ashmun Sts.

TELEPHONES; - { OFFICE NO. 7. RESIDENCE NO. 4.

D. & C.

The Detroit & Cleveland Steam Nav. Co.

Daily except Sunday, for Detroit, Bay City, Saginaw, Grand Rapids, and all Michigan points, at 10:00 P. M.

For Mackinac, Alpena, Petoskey, Soo, and all way ports, Saturdays and Thursdays, 10:00 P. M.

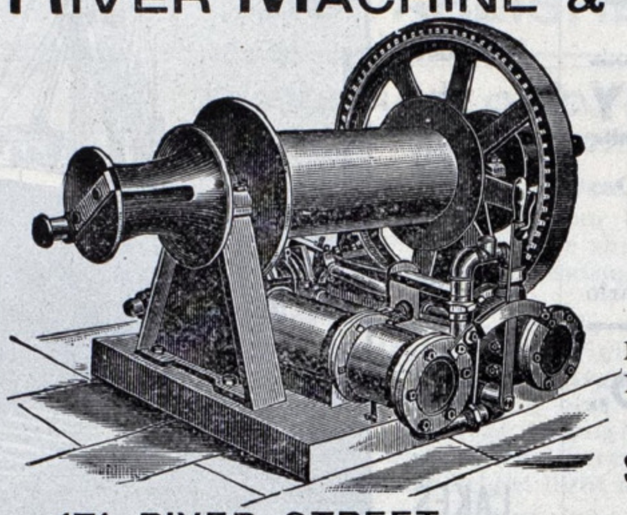
Season of navigation closes about December 1st, 1895.

A. A SCHANTZ, G. P. A., DETROIT, MICH.
D. C. McINTYRE, G. F & D. P. A., CLEVELAND, O.
J. C. MENGENSDORF, C. P. A.

Subscribe now for THE MARINE RECORD. $1.00 will pay for six months, $2.00 for one year, including all supplements.

T. R. TEARE. M. THOMAS.

RIVER MACHINE & BOILER WORKS



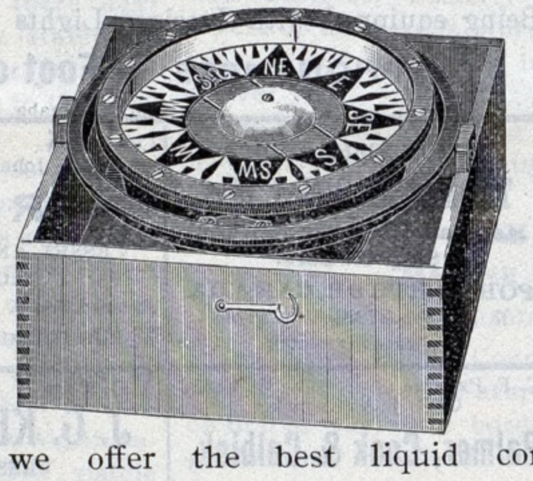
MARINE AND STATIONARY
ENGINES, BOILERS,
. . AND . .
DECK HOISTING ENGINES.

Starting, Stopping, Reversing and Lowering all done by working one Lever.

SOLE AGENTS FOR
St. John's Self Adjusting Cylinder Packing.

171 RIVER STREET, CLEVELAND, O.

LIQUID (SPIRIT) COMPASSES

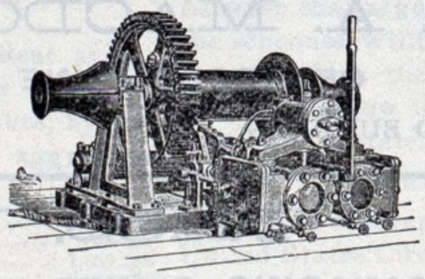


Of our make, in seven sizes, embody every known point of excellence possessed by those of other makers, and in addition have been improved in many important details.

We therefore positively assert that in general construction and thoroughly scientific action of the card, we offer the best liquid compass ever made in this or any country. For sale by ship chandlers generally.

JOHN BLISS & CO.,
128 FRONT STREET, NEW YORK.

DECK AND DOCK HOISTS



Our Hoists will be found on the following boats: Tugs—Superior, Sumner, Sweepstakes, Winslow, J. K. Emmett, Acme, Mockingbird, Waldo Avery, Reliance, John Owen, Charlton, Howard, Duncan City, Chamberlain, Balize, Sampson, Westover, Gladiator, W. B. Castile, Home Rule, Robert Weideman, Boscobel and Peter Smith; Propellers—Metamora, Abercom, Penobscot, J. J. McWilliams, I. W. Stephenson, John W. Pauly; Barges—Jenness, Noquebay, Mantanee. Also in use by F. W. Wheeler & Co., W. B. City, Mich., Blood and Hart, Marine City, Mich., Michigan Salt Works, Marine City, Doty Bros,, Pile Drivers, Toronto, Canada.

MARINE IRON CO., - - Bay City, Mich.

Cleveland & Buffalo Transit Company.

$2.50 CLEVELAND TO BUFFALO.

VIA "C. & B. LINE."

Magnificent side-wheel steel steamers,

"State of Ohio" and "State of New York"

DAILY TIME TABLE.
SUNDAY INCLUDED.

Lv. Cleveland,	6:00 p. m.	Lv. Buffalo,	6:30 p m.
Ar. Buffalo,	7:30 a m.	Ar. Cleveland,	7:30 a. m.

CENTRAL STANDARD TIME.

Take the "C & B. Line" steamers and enjoy a refreshing night's rest when enroute to **Buffalo, Niagara Falls, Toronto, New York, Boston, Albany, 1000 Islands**, or any Eastern or Canadian point.

Cheap Excursions Weekly to Niagara Falls.

Send 4 cents postage for tourist pamphlet.

W. F. HERMAN, Gen'l Pass. Agent. T. F. NEWMAN, Gen'l Manager.
CLEVELAND, O.

Now under construction for this Company the largest side-wheel steamer on the Great Lakes, unsurpassed for speed and elegance, will be ready to go into commission April, 1896.

FRANKLIN HOUSE

Corner Bates and Larned sts., only a block from Woodward and Jefferson aves.
DETROIT, MICH.
The house has been **thoroughly renovated** and is in the heart of the city, convenient to all car lines, depots and boat landings.
Per Day. $1.50. H. H. JAMES.

North Atlantic Trident Line.

DIRECT SERVICE

Between Philadelphia and London.

For rates, etc , apply to

CHAS. M. TAYLOR'S SONS,

15, 16 and 17 Merchants' Exchange.
PHILIP W. RICHARDSON,
3 Fen Court, Lodnon, E. C.

LOOK OUT FOR . . .

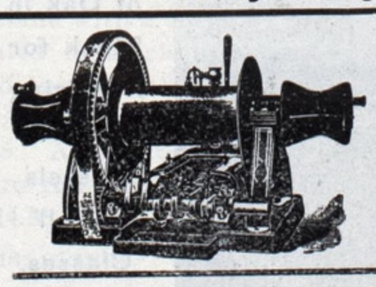
GRAHAM'S COAL DOCK,

Foot of Twenty-first Street, DETROIT, MICH.

All modern facilities for quick dispatch.
Widest point on River.
No interference from Car or Ferry Boats.

JAMES GRAHAM,
DETROIT, MICH.

TELEPHONE 2083.



JACKSON & CHURCH,

BUILDER OF DUPLEX HOISTING AND DECK ENGINES.

Plain Finished and Automatic **ENGINES,** From Heavy Patterns at Moderate Prices.

Vertical, Horizontal, Marine and Locomotive **BOILERS** Strictly First-Class and Highest Test.

SEND FOR CIRCULAR AND PRICES. **SAGINAW, MICH.**

Nautical Watch Chain.

SOLID GOLD. SHIP-SHAPE IN EVERY DETAIL.

Sheaves work, snatch block opens out and seizings are passed correctly.

MORGAN A. ROBERTSON,
26 John Street, New York.
Send for Descriptive Circular.

CRANDALL'S PATENT PACKINGS.

FOR STEAM, WATER AND AMMONIA.

Not having been subjected to the injurious chemical action of boiling oil, outlast all others, and never melt and gum. We are constantly displacing other packings on Lake and Ocean Steamers, and can guarantee our goods for marine work. Ask the man offering "the same thing" to explain his process. He boils his goods in oil.

Send for Descriptive Catalogue and Samples.

CRANDALL PACKING CO.

New York, 136 Liberty Street. Chicago, 51 S. Canal Street. Main Offices and Works, PALMYRA, N. Y.

Paint your Vessels with **Superior Graphite Paint**

NO BLISTERING, CRACKING OR SCALING.

Made especially for Stacks, Decks, Sides, Hulls and Water Compartments. Strictly anti-rust, and most durable and economical.

DETROIT GRAPHITE MFG. CO. 542 River St., Detroit, Mich.

WHITTON & BATES, Agents, 503 Perry-Payne Building, Cleveland, O.

THE CUDDY-MULLEN COAL COMPANY

DEALERS IN COAL. Docks at Government Pier, Whiskey Island, and Adjoining Globe Dry Dock.

All fully equipped with Revolving Derricks; also, Lighter Carrying Derrick, and One Hundred Two and One-Half Ton Buckets.

Main Office, 81 Perkins Building, East Side of Main Street Bridge.
Dock Office, 127 West River St., Cleveland, Ohio. Telephone No. 8.
Boats Coaled Day and Night. Docks at Amherstburg and Sandwich, Ontario

---

MULLEN-GATFIELD COAL CO.,

Dealers in the Celebrated

MANSFIELD AND YOUGHIOGHENY COALS.

Docks at SANDWICH, ONTARIO, opposite the Fort at Detroit, with chutes for rapid fueling. Elevated docks and derrick at AMHERSTBURG, ONTARIO.

O. W. SHIPMAN DOCKS.

AMHERSTBURG, ONT.

Four Chutes and Low Dock.

Massillon and KOAL Youghiogheny Hocking . . .

Main Office, 90 Griswold St., DETROIT.

The "CINCINNATI" Automatic STEAM STEERING GEAR

Simple, Powerful Machine. Noiseless and Sure. Send for Circular.

FRONTIER IRON WORKS, Detroit, Mich.,
AGENTS FOR THE LAKES.

AMERICAN STEEL BARGE CO.

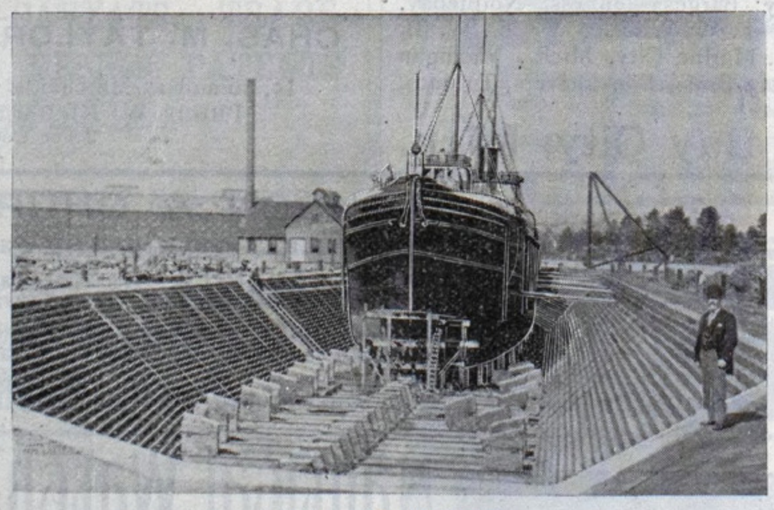
STEEL AND METAL SHIPS

OF ALL CLASSES BUILT ON SHORTEST POSSIBLE NOTICE AT OUR YARDS AT

WEST SUPERIOR, WIS., and also at EVERETT, WASH.

PHOTOGRAPH OF 300 FT. BOAT IN DOCK.

Plates and Material Always on Hand to Repair all kinds of Metal Ships in Shortest Time.



Best Quality of Oak in Stock for Repairing Wooden Vessels of all Classes.

SIZE OF DOCK

Length, Extreme	537 feet.	Entrance, Top,	55 feet 9 in.
Breadth, Top,	90 " 4 in.	Entrance, Bottom	50 "
Breadth, Bottom	52 "	Depth over Sills	18 "

LARGEST DRY DOCK ON THE LAKES.

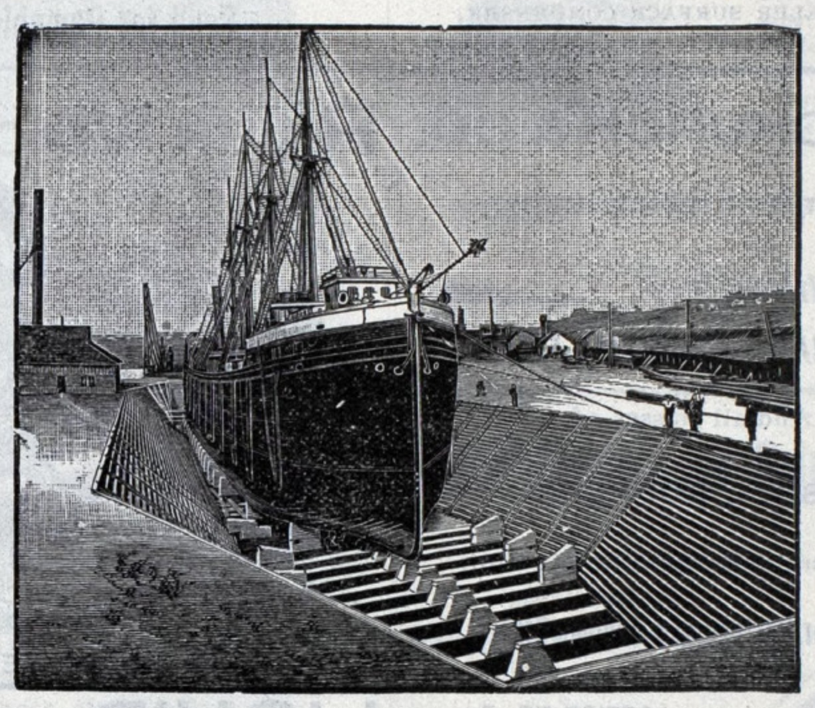
PRICES FOR REPAIRS AND DOCKING SAME AS AT LOWER LAKE PORTS.

SUPERIOR, WIS.

A NUMBER OF PROPELLER WHEELS IN STOCK AT DRY DOCK.

THE SHIP OWNERS DRY DOCK CO.

Largest DOCK YARD on the GREAT LAKES.



Capacity with Two Docks to Dock the Largest Ships on the Lakes.

GENERAL REPAIR WORK PROMPTLY ATTENDED TO.

Being equipped with Lucigen Lights we can do work at night as well as day.

TELEPHONE 1635. Foot of Weddell St., CLEVELAND, O.

ESTABLISHED 1857.
THOMAS MARKS & CO.,
Merchants, Forwarders and Ship Owners.
PORT ARTHUR, CANADA.
N. B.—Special attention given to chartering vessels.

Calvin Carr. G. C. Blair. John Mitchell.
CARR & BLAIR
VESSEL AND INSURANCE AGENTS,
Rooms 1 and 2. Tel. Main 869.
12 Sherman St. CHICAGO.

A. A. Parker. James W. Millen. B. W. Parker.
PARKER & MILLEN,
Vessel & Insurance Agents.
Iron Ore & Coal Cargoes a Specialty.
Rooms 3 & 4 15 Atwater St., West.
DETROIT, MICH.

C. F. Palmer. H. W. Cook. Capt. J. A. Calbick.
Palmer, Cook & Calbick,
Vessel Agents and Underwriters,
No. 6 Sherman Street, Chicago, Ill.
Telephone, Main 3952.

J. G. Keith. D. Sullivan.
J. G. KEITH & CO.
VESSEL AND INSURANCE AGENTS,
140 and 141 Rialto Bldg. CHICAGO.
Telephone No. 3658.

JOHN PRINDIVILLE,
VESSEL AND INSURANCE AGENT,
12 Sherman Street,
Telephone Main 129. CHICAGO.

C. A. MACDONALD & CO.,

GENERAL MARINE INSURANCE AGENTS.

RIALTO BUILDING, CHICAGO, ILL.

THOS. WILSON,

MANAGING OWNER WILSON'S TRANSIT LINE,

General Forwarder, Freight and Vessel Agent. CLEVELAND, O.

C. R. JONES & CO., VESSEL AGENTS.

FIRE AND MARINE INSURANCE.

Nos. 501, 502 and 503 Perry-Payne Bldg., CLEVELAND, O.

JOHN MITCHELL. JOHN F. WEDOW. ALFRED MITCHELL.

MITCHELL & CO., Vessel and Insurance Agents,

Office Telephone, 767.
Residence John Mitchell, 3506.
508-509-510 Perry-Payne Building,
CLEVELAND, O.

BEESON'S DIRECTORY for 1895.

Send orders to

Smith & Swainson, Cleveland, O.

PRICE $5.00; INCLUDING SUBSCRIPTION TO THE MARINE RECORD $6.00.